

Scheme & Syllabus of Diploma in Computer Applications

(DCA)

Duration: 1 Year (Two Semesters)

First Semester

Contact Hours: 30 Hrs.

Subject Code	Subject Title	Load Allocation (per week)			Marks Distribution		Total Marks	Credits
		L	T	P	Internal	External		
DCA-101	Fundamentals of Information Technology	3	1	-	40	60	100	4
DCA-102	Programming in C	3	1	-	40	60	100	4
DCA-103	Mathematics	3	1	-	40	60	100	4
DCA-104	English (Comm. Skills)	1	-	-	40	60	100	1
DCA-105	Human Values, De addiction and Traffic Rules	3	-	-	40	60	100	3
DCA-106	Lab1- Fundamentals Of Information Technology	-	-	4	60	40	100	2
DCA-107	Lab2 – Programming in C	-	-	4	60	40	100	2
DCA-108	Lab3 – English (Comm. Skills)	-	-	2	30	20	50	1
DCA-109	Lab4 - Human Values, De addiction and Traffic Rules(Lab/Seminar)	-	-	1	25	--	25	1
DCA-110	Lab5 – Workshop on Desktop Publishing	-	-	4	60	40	100	2
DCA-111	Mentoring and Professional Development	-	-	1	25	--	25	1
TOTAL		13	3	16	460	440	900	25

Second Semester

Contact Hours: 30 Hrs.

Subject Code	Subject Title	Load Allocation (per week)			Marks Distribution		Total M	Credits
		L	T	P	Internal	External		
DCA-201	Web Technology	3	1	-	40	60	100	4
DCA-202	Computer System Architecture	3	1	-	40	60	100	4
DCA-203	Programming in C++	3	1	-	40	60	100	4
DCA-204	Environmental Studies	2	-	-	40	60	100	2
DCA-205	Minor Project	4	-	-	40	60	100	4
DCA-206	Lab1 – Computer System Architecture	-	-	4	60	40	100	2
DCA-207	Lab2 – Web Technology	-	-	4	60	40	100	2
DCA-208	Lab3 – Programming in C++	-	-	4	60	40	100	2
DCA-209	Mentoring and Professional Development	-	-	1	25	--	25	1
TOTAL		15	3	13	405	420	825	25

**The Human Values, De-addiction and Traffic Rules (Lab/ Seminar) and Mentoring and Professional Development course will have internal evaluation only. (See guidelines at the last page of this file)

Semester-I

DCA101:- FUNDAMENTALS OF INFORMATION TECHNOLOGY

UNIT-I

Introduction to Computers: Definition of Computer; Components of Computer; Characteristics of Computers; History evolution of Computers; Generation of computers;

Classification of Computers: According to Purpose, According to Technology, According to Size and Storage Capacity; Human being VS Computer; Difference between Computer and Calculator.

Number System: Binary, Octal and Hexadecimal, Conversion from one system to the other, Binary Arithmetic, Addition Subtraction and Multiplication, Number Systems: Decimal, Binary, Octal and Hexadecimal number system and conversion, Binary weighted codes and conversion, Binary arithmetic, 1's Complement and 2's Complement, Overflow and Underflow.

UNIT-II

Input Devices: Mouse, Keyboard, Light pen, Track Ball, Joystick, MICR, Optical Mark reader and Optical Character reader. Scanners, Voice system, Web, Camera.

Output Devices: Hard Copy Output Devices; Line Printers, Character Printers, Chain Printers, Dot-matrix Printers, Daisy Wheel Printer, Laser Printers, Ink jet Printers, Plotters, Soft Copy device-Monitor, Sound card and speakers.

Memory and Mass Storage Devices: Characteristics of Memory Systems; Memory Hierarchy; Types of Primary Memory; RAM and ROM; Secondary and Back-up; Magnetic Disks, Characteristics and classification of Magnetic Disk, Optical Disk, Magnetic Tape.

UNIT-III

C.P.U Organization: Instruction Set, Processor Speed, Process concept, types of Process scheduling, Basic concept of CPU Scheduling, Scheduling criteria, and Scheduling algorithms: FCFS, SJF, Round Robin & Queue Algorithms, Deadlock definition and its characterization.

Introduction To Operating System: Definition, its need and Operating system services, Early systems, Introduction to various types of operating systems: Batch processing operating system, Multiprogramming operating system, Time Sharing operating system, Multi tasking operating system, Distributed operating system, Network operating system, Real time operating system, Multi processor system and parallel processing. Installation of windows, Introduction to DOS, DOS Commands.

UNIT-IV

Office Automation: Introduction, Today's office, need for office automation, its advantages, disadvantages and office automation tools.

Documentation Using MS-Word: Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Tables, Mail Merge,

Electronic Spread Sheet using MS-Excel: Excel worksheet, data entry, editing, cell addressing ranges, commands, and menus, copying & moving cell content, inserting and deleting rows and column, column formats, cell protection, printing, creating, displaying and printing graphs, statistical functions.

Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures

Text Books:

1. Introduction to Information Technology, IITL Education Solutions limited, Pearson Education
2. Computer Fundamentals, A. Goel, 2010, Pearson Education.
3. Fundamentals of Computers, P. K.Sinha & P. Sinha, 2007, BPB Publishers.
4. IT Tools, R.K. Jain, Khanna Publishing House
5. “Introduction to Information Technology”, Satish Jain, Ambrish Rai & Shashi Singh, Paperback Edition, BPB Publications, 2014.

Reference Books:

1. “Introduction to Computers”, Peter Norton
2. Computers Today, D. H. Sanders, McGraw Hill.
3. “Computers”, Larry long & Nancy long, Twelfth edition, Prentice Hall.
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning

DCA102:-PROGRAMMING IN C

UNIT-I

Overview of C: History of C, Importance of C, Structure of a C Program.

Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.

Input/output: Unformatted & formatted I/O function in C, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putchar(), puts().

UNIT-II

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement.

UNIT-III

Functions in C: uses of functions, user defined functions, function declarations, calling a function, actual and formal arguments, Rules to call a function, function prototype, recursion, Local or internal variables, Global or external variables, void function.

String Manipulation in C: String handling functions in C, strlen() function, strcpy() function, strcat() function, strcmp() function, reading/writing strings, atoi() function, additional string handling functions, operations with characters

Storage classes in C: auto or automatic storage class, static storage class, extern storage class, register storage class.

UNIT-IV

Arrays and subscripted values: one dimensional array, two dimensional array, Array declaration, accessing values in an array, initializing values in an array.

Structures and unions: structures, structure variables and arrays, initialization of structure variables and arrays, dot(.) operator, assigning values of a structure to another structure, structure as a function argument, structure within structure, sizeof() of a structure, unions, sizeof() of a union, difference between a structure and a union, enum data type, Bit field, typedef declaration.

UNIT-V

Pointers: pointer declaration, address operator &, indirection operation *, expressions using pointers, pointers as function arguments, call by value, call by reference, comparison between call by value and call by reference, pointer arithmetic, pointers with arrays, reading/writing values in a n array using pointer,.

Files And Streams: Classes for file stream operations, opening and closing of files, stream state member functions, binary file operations, structures and file operations, classes and file operations, I/O with multiple objects, error handling, sequential and random access file processing.

Text Books:

1. Programming in ANSI C, E. Balagurusami, Fourth Edition, Tata McGraw Hill.
2. Programming in C, Third Edition, Stephen G Kochan, Pearson.
3. The C Programming Language, Kernighan & Richie, Second Edition, PHI Publication.

Reference Books:

1. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications
2. Let us C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
3. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.
4. Problem Solving and Programming in C, R.S. Salaria, Second Edition
5. Programming in C, Atul Kahate.

DCA103:-MATHEMATICS

Unit-I

Set Introduction, Objectives, Representation of Sets (Roster Method, Set Builder Method), Types of Sets (Null Set, Singleton Set, Finite Set, Infinite Set, Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set, Universal Set) and Operation with Sets (Union of Set, Intersection of Set, Difference of Set, Symmetric Difference of Set) Universal Sets, Complement of a Set.

Unit-II

Logic Statement, Connectives, Basic Logic Operations (Conjunction, Disjunction, Negation) Logical Equivalence/Equivalent Statements, Tautologies and Contradictions.

Unit -III

Matrices Introduction, Types of Matrix (Row Matrix, Column Matrix, Rectangular Matrix, Square Matrix, Diagonal Matrix, Scalar Matrix, Unit Matrix, Null Matrix, Comparable Matrix, Equal Matrix), Scalar Multiplication, Negative of Matrix, Addition of Matrix, Difference of two Matrix, Multiplication of Matrices, Transpose of a Matrix.

Unit-IV

Progressions Introduction, Arithmetic Progression, Sum of Finite number of quantities in A.P, Arithmetic Means, Geometric Progression, Geometric Mean.

Text Books:

1. Discrete Mathematics and Its Applications by Kenneth H. Rosen, Mc Graw Hill, 6th Edition.
2. College Mathematics, Schaum's Series, TMH.

Reference Books:

1. Elementary Mathematics, Dr. RD Sharma
2. Comprehensive Mathematics, Parmanand Gupta
3. Elements of Mathematics, ML Bhargava

DCA104:-ENGLISH (COMMUNICATION SKILLS)

UNIT-I

Introduction to Communication: Meaning of Communication, Process of Communication, Importance and Benefits of Communication in Business Organizations. The 7 C's of Effective communication, Barriers to Communication and the ways to overcome them.

UNIT-II

Types Of Communication: Communication Models, Formal & Informal, Personal, Inter-personal, Group and Mass, Vertical & Horizontal, One-way & Two-way Models of Communication. Characteristics and Classification of Non-Verbal Communication, Advantages of learning Non-Verbal Communication Skills.

UNIT -III

Developing Listening Skills: Importance, purpose of listening, art of listening, factors affecting listening, components of effective listening, process of listening, principles and barriers to listening, activities to improve listening.

UNIT-IV

English Language: Parts of Speech: Nouns, Pronouns, Verbs, Adjectives, Adverbs, Prepositions, Conjunctions, Interjections, Determiners, Degrees of Comparison, Forms of Verb. Tenses, Précis Writing, What is a Précis? Guidelines for writing an effective précis, Paragraph Writing & Non-textual Comprehension.

Recommended Readings:

1. Fluency in English - Part II, Oxford University Press, 2006.
2. Business English, Pearson, 2008.
3. Language, Literature and Creativity, Orient Blackswan, 2013.
4. Language through Literature (forthcoming) ed. Dr. Gauri Mishra, Dr Ranjana Kaul, Dr Brati Biswas
5. On Writing Well. William Zinsser. Harper Resource Book. 2001
6. Study Writing. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.

DCA105:-HUMAN VALUES, DE-ADDICTION AND TRAFFIC RULES

Unit-I : Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

- Understanding the need, basic guidelines, content and process for Value Education.
- Self-Exploration–what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self exploration.
- Continuous Happiness and Prosperity- A look at basic Human Aspirations.
- Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority.
- Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario.
- Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

Unit-II : Understanding Harmony in the Human Being - Harmony in Myself!

- Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’
- Understanding the needs of Self (‘I’) and ‘Body’ - *Sukh* and *Suvidha*
- Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer)
- Understanding the characteristics and activities of ‘I’ and harmony in ‘I’
- Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
- Programs to ensure *Sanyam* and *Swasthya* - Practice Exercises and Case Studies will be taken up in Practice Sessions.

Unit-III : Understanding Harmony in the Family and Society- Harmony in Human Human Relationship

- Understanding harmony in the Family- the basic unit of human interaction
- Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*; Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
- Understanding the meaning of *Vishwas*; Difference between intention and competence
- Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
- Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
- Visualizing a universal harmonious order in society- Undivided Society (*Akhand Samaj*), Universal Order (*Sarvabhaum Vyawastha*)- from family to world family! - Practice Exercises and Case Studies will be taken up in Practice Sessions.

Unit-IV : Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

- Understanding the harmony in the Nature
- Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
- Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
- Holistic perception of harmony at all levels of existence - Practice Exercises and Case Studies will be taken up in Practice Sessions.

Unit-V : Implications of the above Holistic Understanding of Harmony on Professional Ethics

- Natural acceptance of human values
- Definitiveness of Ethical Human Conduct
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competence in professional ethics:
 - a) Ability to utilize the professional competence for augmenting universal human order,
 - b) Ability to identify the scope and characteristics of peoplefriendly and eco-friendly production systems,
 - c) Ability to identify and develop appropriate technologies and management patterns for above production systems.
- Case studies of typical holistic technologies, management models and production systems
- Strategy for transition from the present state to Universal Human Order:
 - a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - b) At the level of society: as mutually enriching institutions and organizations.

Text Book

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Value Education.

Reference Books

1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA.
2. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
3. A Nagraj, 1998, Jeevan Vidya ek Parichay, Divya Path Sansthan, Amarkantak.
4. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991.
5. PL Dhar, RR Gaur, 1990, Science and Humanism, Common wealth Publishers.
6. A.N. Tripathy, 2003, Human Values, New Age International Publishers

DCA106:- LAB 1 - Fundamentals Of Information Technology

Word Orientation:

The instructor needs to give an overview of word processor.

Details of the four tasks and features that would be covered Using word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter.

1. Using word to create Resume
Features to be covered: - Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in Word.
2. Creating an Assignment
Features to be covered: - Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.
3. Creating a Newsletter
Features to be covered :- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs
4. Creating a Feedback form
Features to be covered :- Forms, Text Fields, Inserting objects, Mail Merge in Word.

Excel Orientation:

The instructor needs to tell the importance of Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered Excel – Accessing, overview of toolbars, saving excel files,

1. Creating a Scheduler
Features to be covered :- Gridlines, Format Cells, Summation, auto fill, Formatting Text
2. Calculations
Features to be covered :- Cell Referencing, Formulae in excel – average, std.deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP
3. Performance Analysis
Features to be covered :- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting
4. Game (like Cricket, badminton) Score Card
Features to be covered :- Pivot Tables, Interactive Buttons, Importing Data, Data Protection, Data Validation

Presentation Orientation:

1. Students will be working on basic power point utilities and tools which help them create basic power point presentation.
Topic covered includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows
2. This session helps students in making their presentations interactive.
Topics covered includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts
3. Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation.
Topics covered includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides. Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing
4. Power point test would be conducted. Students will be given model power point presentation which needs to be replicated

Internet and its Applications:

The instructor needs to tell the how to configure Web Browser and to use search engines by defining search criteria using Search Engines

1. To learn to setup an e-mail account and send and receive e-mails
2. To learn to subscribe/post on a blog and to use torrents for accelerated downloads
3. Hands on experience in online banking and Making an online payment for any domestic bill

Reference Books:

1. "Introduction to Computers", Peter Norton
2. Computers Today, D. H. Sanders, McGraw Hill.
3. "Computers", Larry long & Nancy long, Twelfth edition, Prentice Hall.
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning

DCA107:- LAB 2 - PROGRAMMING IN C

- 1) WRITE A PROGRAM to display your name. Write another program to print message with inputted name.
- 2) WRITE A PROGRAM to add two numbers.
- 3) WRITE A PROGRAM to find the square of a given number.
- 4) WRITE A PROGRAM to calculate the average of three real numbers.
- 5) Write a program to Find ASCII Value of a Character
- 6) WRITE A PROGRAM to Find the Size of int, float, double and char
- 7) WRITE A PROGRAM to Compute Quotient and Remainder
- 8) WRITE A PROGRAM to accept the values of two variables.
- 9) WRITE A PROGRAM to find the simple interest, inputs are amount, period in years and rate of interest.
- 10) Basic salary of an employee is input through the keyboard. The DA is 25% of the basic salary while the HRA is 15% of the basic salary. Provident Fund is deducted at the rate of 10% of the gross salary(BS+DA+HRA). WRITE A PROGRAM to calculate the net salary
- 11) WRITE A PROGRAM to find area of a circle using PI as constant
- 12) WRITE A PROGRAM to find volume of a cube using side as input from user
- 13) WRITE A PROGRAM using various unformatted Input Functions
- 14) WRITE A PROGRAM to find area of rectangle and print the result using unformatted output Functions
- 15) WRITE A PROGRAM to find the larger of two numbers.
- 16) WRITE A PROGRAM to find greater of three numbers using Nested If.
- 17) WRITE A PROGRAM to find whether the given number is even or odd.
- 18) WRITE A PROGRAM to Generate Multiplication Table Using for loop
- 19) WRITE A PROGRAM to Generate Multiplication Table Using while loop
- 20) WRITE A PROGRAM to Make a Simple Calculator Using switch...case
- 21) WRITE A PROGRAM to find whether the given number is a prime number.
- 22) WRITE A PROGRAM using function to find the largest of three numbers
- 23) WRITE A PROGRAM using function to print first 20 numbers and its squares.
- 24) WRITE A PROGRAM to find the factorial of a given number.
- 25) WRITE A PROGRAM to print the sum of two matrices
- 26) WRITE A PROGRAM to Find the Length of a String
- 27) WRITE A PROGRAM to Copy String using strcpy()
- 28) WRITE A PROGRAM to compare a string
- 29) WRITE A PROGRAM to reverse a string
- 30) WRITE A PROGRAM to reverse a string
- 31) WRITE A PROGRAM to multiply two numbers using pointers.
- 32) WRITE A PROGRAM to display address of variable using pointers
- 33) WRITE A PROGRAM to show the memory occupied by Structure and Union
- 34) WRITE A PROGRAM to create Student I-Card using a Structure
- 35) WRITE A PROGRAM to read data from a file from a file
- 36) WRITE A PROGRAM to save Employee details in a file using File Handling

DCA108:- LAB 3 - ENGLISH (COMMUNICATION SKILLS)

Interactive practice sessions in Language Lab on Oral Communication

- Listening Comprehension
- Self-Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations
- Monologue
- Effective Communication/ Mis- Communication
- Public Speaking

Recommended Readings:

1. Fluency in English - Part II, Oxford University Press, 2006.
2. Business English, Pearson, 2008.

DCA109:- Lab4 – Human Values, De-addiction and Traffic Rules (Lab/Seminar)

One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the Seminar at least once during the semester. It will be binding for all the students to attend the seminar.

DCA110:- Lab5 – Workshop on Desktop Publishing

1. Design and print a *Title Page* of a Magazine/Book.
2. Prepare multiple designs for a *Flex* by using different Tools.
3. Prepare *NSS Certificates* for appreciation using logos of University, College & NSS unit.
4. Prepare 5 different Designing of *Business Cards*.
5. Prepare *Envelops* displaying full address of the company by inserting graphical symbol/ logos of company.
6. Design and Print *Invoices* for three companies.
7. Prepare and print *News Letter Layouts* for any five activities of your college/ university.
8. Prepare *Invitation Cards* for cultural meet held in your college.
9. Design and print *Brochures* to advertise a “Blood Donation Camp” in your college.
10. Design *Logos* of your college, University & Govt. of Punjab also display these logos on black background as water mark.
11. Design, Print and Publish 5 motivations Playcards.
12. Design & Print assignment book of minimum 20 Pages an any Topic.
13. Design & Print any five most important activities of your college in a collage.
14. Design & Print Question Paper of any Subject.
15. Assemble all the latest news cutting of your activities on a 10 X 8 size flex.

REFERENCE BOOKS:

1. DTP Course, by Shirish Chavan published by Rapidex.
2. DTP Course Kit by Vikas Gupta published by Comdex.
3. CorelDraw 9 by David Karlins published by Techmedia.
4. Adobe Illustrator CC by Brian Wood published by Adobe Press.
5. Page Maker in Easy Steps - Scott Basham.

SOFTWARE TOOLS:

1. Adobe Illustrator 14.
2. CorelDraw Graphics Suit.
3. GNU image manipulation program.
4. Ink Scape.
5. PhotoScape Setup.
6. PM701.

Semester-II

DCA201:-WEB TECHNOLOGY

UNIT- I

HTML: Introduction to HTML, SGML, Internet and Web structure of HTML document.

Starting an HTML document: Head element, body element, style element, Text formatting, Using lists to organize information.

Internet and World Wide Web: Introduction, Internet Addressing, types of Internet Connections, Introduction to WWW, WEB Browsers, WEB Servers, WEB Applications, Tools for web site creation.

UNIT -II

Organizing Data With Table: Basic Table Structures, Individual cells and headings, Rowspan, Colspan.

Using Hyper Links And Anchors: Uses to Hyper Links, Structure of Hyper Links, Links to specialized contents.

Images: Adding Images to web page, using images as links, creating menus with image maps, image formats-GIF, JPEG etc.

UNIT- III

E-Mail: architecture, various aspects, the user agent, message format, message transfer, e-mail privacy.

Uniform Resource Locators (Urls): Absolute URLs, Relative URLs, fragment URLs, Types of URL Schemes- HTTP, mailto, news, FTP, Telnet, File etc.

UNIT-IV

HTML Forms: Understanding forms, creating simple GO button, fill-in-form page, form security, INPUT element, BUTTON element, SELECT element, TEXT AREA element, LABEL element.

Style Sheets: Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS.

Java Script: JavaScript Introduction, JavaScript Variables, JavaScript Popup Boxes, JavaScript events, JavaScript Redirect, JavaScript String, JavaScript math, JavaScript Date. JavaScript Array, JavaScript form validation, JavaScript Email validation, JavaScript Phone validation

Text Books/Reference Books:

1. Internet for EveryOne: Alexis Leon, 1st Edition, Leon Techworld, Publication, 2009.
2. Greenlaw R; Hepe, "Fundamentals of Internet and WWW", 2nd Edition, Tata McGraw-Hill, 2007.
3. Raj Kamal, "Internet& Web Technologies", edition Tata McGraw-Hill Education.2009.

DCA202:- COMPUTER SYSTEM ARCHITECTURE

Unit-I

Logic Gates: AND, OR, NOT, NAND, NOR, XOR, XNOR, NAND & NOR as Universal Gates, Logic Gates Applications.[CO5]

Boolean Algebra: Introduction, Theorems, Simplification of Boolean Expression using Boolean Algebra, SOP & POS Forms, Realization of Boolean Expression using Gates, K-Maps, Simplification of Boolean Expression using K-Maps.

Unit-II

Combinational Logic Circuits: Half Adder & Half Subtractor, Full Adder & Full Subtractor, Parallel Binary Adder, Binary Adder/Subtractor. [CO4]

Combinational Logic Circuits: Multiplexers & Demultiplexers, Implementation of Boolean equations using Multiplexer and Demultiplexer, Encoders & Decoders.

Unit-III

Sequential Logic Circuits: Latch, Flip Flops- R-S Flip-Flop, J-K Flip-Flop, Race Around Condition, Removing Race Around Condition, Master-Slave JK Flip-Flop, D Flip-Flop, T Flip-Flop, Applications of Flip-Flops.

Unit-IV

Introduction to Computer Organization: Introduction to Computer and CPU (Computer Organization, Computer Design and Computer Architecture), Stored Program Concept- Von Neumann Architecture, Harvard Architecture, RISC and CISC Architecture. [CO1]

Register Transfer and Micro operations- Introduction to Registers, Instruction Format, Types of Instructions- Memory Reference Instructions, Register Reference Instructions and Input-Output Instructions.

Common Bus System: Introduction to Common Bus System, Types of Buses (Data Bus, Control Bus, Address Bus), 16-bit Common Bus System--Data Movement among registers using Bus.

Text Books:

1. Computer System Architecture, M.M. Mano, Third Edition, PHI.
2. Digital Computer Electronics, Malvino, Second Edition, Mc-Graw Hill
3. Modern Digital Electronics, R. P. Jain, Fourth Edition, TMH.

Reference Books:

1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.
2. Computer Organization and Architecture, J.P.Hayes, Third Edition, TMH.
3. Digital and Electronic Circuits, T. C. Bartee, McGraw Hill.
4. Digital Fundamentals, Floyd, Ninth Edition, PHI.
5. Digital Integrated Electronics, Taub & Schilling, Eighth Edition, Mc-Graw Hill.

DCA203:-PROGRAMMING IN C++

UNIT-I

Principles of Object-Oriented Programming: A Look at Procedure-Oriented Programming; Object Oriented Programming Paradigm; Basic Concepts of Object-Oriented Programming; Benefits of OOP; Object Oriented Languages; Applications of OOP.

Beginning with C++ : What is C++?, Applications of C++, A Simple C++ Program, More C++ Statements, An Example with Class; Structure of C++ Program, Creating the Source File, Compiling and Linking.

UNIT-II

Tokens, Expressions and Control Structures: Introduction; Tokens; Keywords; Identifiers; Basic Data Types; User-Defined Data Types; Derived Data Types; Symbolic Constants; Type Compatibility; Declaration of Variables; Dynamic Initialization of Variables; Reference Variables; Operators in C++; Scope Resolution Operator; Member Dereferencing Operators; Memory Management Operators; Manipulators; Type Case Operator; Expressions and Implicit Conversions; Operator Overloading; Operator Precedence; Control Structures.

Functions in C++ : Introduction; The Main Function; Function Prototyping; Call by Reference; Inline Functions; Default Arguments; const Arguments; Function Overloading; Friend and Virtual Functions.

UNIT-III

Classes and Objects: Introduction; C Structures Revisited; 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 Function Arguments; Friendly Functions; Returning Objects; const Member Functions; Pointers to Members.

Constructors and Destructors: Introduction; 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.

Operator Overloading and Type Conversions : Introduction; Defining Operator Overloading; Overloading Unary Operators; Overloading Binary Operators; Overloading Binary Operators Using Friends; Manipulation of Strings Using Operators; Rules for Overloading Operators; Type Conversions.

UNIT-IV

Inheritance Extending Classes : Introduction; Defining Derived Classes; Single Inheritance; Making a Private Member Inheritable; Multilevel Inheritance; Multiple Inheritance; Hierarchical Inheritance; Hybrid Inheritance; Virtual Base Classes; Abstract Classes; Constructors in Derived Classes.

Member Classes : Nesting of Classes, Pointers.

Virtual Functions and Polymorphism: Introduction; Pointers to Objects; this Pointer; Pointers to Derived Classes; Virtual Functions; Pure Virtual Functions.

UNIT- V

Managing Console I/O Operations: Introduction; C++ Streams; C++ Stream Classes; Unformatted I/O Operations; Formatted Console I/O Operations; Managing Output with Manipulators.

Working with Files: Introduction; Classes for File Stream Operations; Opening and Closing a File; Detecting End-of-File; More About Open() : File Modes; File Pointers and Their Manipulations; Sequential Input and Output Operations; Updating a File : Random Access; Error Handling During File Operations; Command-Line Arguments.

Text Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
3. The C++ Programming Language, Bjarna Stroustrup, Third Edition, Addison Wesley Publishing Company.
4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.

DCA204:- ENVIRONMENTAL STUDIES

UNIT-1: Introduction to Environmental Studies

Multidisciplinary nature of Environmental Studies: Scope & Importance Need for Public Awareness

UNIT-2: Ecosystems

Concept of an Ecosystem: Structure & functions of an ecosystem (Producers, Consumers & Decomposers) Energy Flow in an ecosystem: Food Chain, Food web and Ecological Pyramids
Characteristic features, structure & functions of following Ecosystems:

Forest Ecosystem

Aquatic Ecosystem (Ponds, Lakes, River & Ocean)

UNIT-3: Natural Resources

Renewable & Non-renewable resources Forest Resources: Their uses, functions & values (Biodiversity conservation, role in climate change, medicines) & threats (Overexploitation, Deforestation, Timber extraction, Agriculture Pressure), Forest Conservation Act Water Resources: Their uses (Agriculture, Domestic & Industrial), functions & values, Overexploitation and Pollution of Ground & Surface water resources (Case study of Punjab), Water Conservation, Rainwater Harvesting, Land Resources: Land as a resource; Land degradation, soil erosion and desertification Energy Resources: Renewable & non-renewable energy resources, use of alternate energy resources (Solar, Wind, Biomass, Thermal), Urban problems related to Energy

UNIT-4: Biodiversity & its conservation

Types of Biodiversity: Species, Genetic & Ecosystem India as a mega biodiversity nation, Biodiversity hot spots and biogeographic regions of India Examples of Endangered & Endemic species of India, Red data book

UNIT-5: Environmental Pollution & Social Issues

Types, Causes, Effects & Control of Air, Water, Soil & Noise Pollution Nuclear hazards and accidents & Health risks Global Climate Change: Global warming, Ozone depletion, Acid rain, Melting of Glaciers & Ice caps, Rising sea levels Environmental disasters: Earthquakes, Floods, Cyclones, Landslides

UNIT-6: Field Work

Visit to a National Park, Biosphere Reserve, Wildlife Sanctuary Documentation & preparation of a Biodiversity (flora & fauna) register of campus/river/forest Visit to a local polluted site: Urban/Rural/Industrial/Agricultural Identification & Photography of resident or migratory birds, insects (butterflies) Public hearing on environmental issues in a village

Suggested Books:

1. Bharucha, E. Text Book for Environmental Studies. University Grants Commission, New Delhi.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)

DCA206:- LAB 1 - COMPUTER SYSTEM ARCHITECTURE

- 1) To verify the Truth Table of Basic Logic Gates
- 2) To verify the Truth Table of Combinational Logic Gates
- 3) To verify the Truth Table of Universal Logic Gates
- 4) To verify the Truth Table of Half Adder Combinational Circuit
- 5) To verify the Truth Table of Full Adder Combinational Circuit
- 6) To verify the Truth Table of Half Subtractor Combinational Circuit
- 7) To verify the Truth Table of Full Subtractor Combinational Circuit
- 8) To verify the Truth Table of Decoder Combinational Circuit
- 9) To verify the Truth Table of Encoder Combinational Circuit
- 10) To verify the Truth Table of Multiplexer Combinational Circuit
- 11) To verify the Truth Table of DeMultiplexer Combinational Circuit
- 12) To verify the Truth Table of S-R Flip-Flop
- 13) To verify the Truth Table of J-K Flip-Flop
- 14) To verify the Truth Table of Master Slave J-K Flip-Flop
- 15) To verify the Truth Table of D Flip-Flop
- 16) To verify the Truth Table of T Flip-Flop
- 17) To verify the working of Asynchronous Up Counter
- 18) To verify the working of Asynchronous Down Counter
- 19) To verify the working of Asynchronous MOD-N Counter
- 20) To verify the working of Synchronous Up Counter
- 21) To verify the working of Synchronous Down Counter
- 22) To verify the working of Synchronous MOD-N Counter
- 23) To verify the working of Asynchronous Bidirectional Counter
- 24) To verify the working of Synchronous Bidirectional Counter

Reference Books:

1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.
2. Modern Digital Electronics, R. P. Jain, Fourth Edition, TMH.
3. Digital Logic & Computer Design, D. Morris Mano, Second Edition, PHI.
4. Digital and Electronic Circuits, T. C. Bartee, McGraw Hill.
5. Digital Fundamentals, Floyd, Ninth Edition, PHI.
6. Digital Integrated Electronics, Taub & Schilling, Eighth Edition, Mc-Graw Hill.

DCA207:- LAB 2 - Web Technology

- 1) Create a simple HTML page to demonstrate the use of different tags.
- 2) Design index page of a book on web designing.
- 3) Display Letter Head of your college on a web page.
- 4) Create a Hyperlink to move around within a single page rather than to load another page.
- 5) Display letter using different Text formatting Tags.
- 6) Design Time Table of your department and highlights of most important periods.
- 7) Use Tables to provide layout to your web page.
- 8) Embed Audio and Video into your web page.
- 9) Divide a web page vertically and horizontally and display logo of your college in left pane and logo of university in right pane.
- 10) Create a student Bio- Data.
- 11) Design front page of hospital with different style sheets.
- 12) Design a web page and display two different pages at a time.
- 13) Write a program to create a login form. On submitting the form, the user should get navigated to a profile page using JavaScript.
- 14) Write a code to create a Registration Form. On submitting the form, the user should be asked to login with the new credentials using JavaScript.
- 15) Write an HTML code to create your Institute website/Department website/ Tutorial website for specific subject. Also use Java Script for validation.

Text Books/Reference Books:

1. Internet for EveryOne: Alexis Leon, 1st Edition, Leon Techworld, Publication, 2009.
2. Greenlaw R; Heppel, "Fundamentals of Internet and WWW", 2nd Edition, Tata McGraw-Hill, 2007.
3. Raj Kamal, "Internet & Web Technologies", edition Tata McGraw-Hill Education.2009.

E-Books/ Online learning material:

1. BayrossIvan, "HTML, DHTML, JavaScript, PERL, CGI", 3rd Edition, BPB Publication,2009.
2. Chris Payne, "Asp in 21 Days", 2nd Edition, Sams Publishing, 2003 PDCA.
3. A Beginner's Guide To Html [Http://www.Ncsa.Nine.Edit/General/Internet/www/Html.Prmter](http://www.Ncsa.Nine.Edit/General/Internet/www/Html.Prmter)
4. https://www.tutorialspoint.com/html/html_tutorial.pdf
5. <https://www.w3schools.com/js/>
6. <https://www.w3schools.com/html/>
7. https://www.cs.uct.ac.za/mit_notes/web_programming.html
8. http://www.pagetutor.com/table_tutor/index.html

DCA208:- LAB 3 - PROGRAMMING IN C++

- 1) Write a program to enter mark of 6 different subjects and find out the total mark (Using cin and cout statement)
- 2) Write a function using reference variables as arguments to swap the values of pair of integers.
- 3) Write a function to find largest of three numbers.
- 4) Write a program to find the factorial of a number.
- 5) Define a class to represent a bank account which includes the following members as Data members:
 - a) Name of the depositor b) Account Number c) Withdrawal amount d) Balance amount in the accountMember Functions:
 - a) To assign initial values b) To deposit an amount c) To withdraw an amount after checking the balance d) To display name and balance.
- 6) Write the above program for handling n number of account holders using array of objects.
- 7) Write a C++ program to compute area of right angle triangle, equilateral triangle, isosceles triangle using function overloading concept.
- 8) Consider a publishing company that markets both book and audio cassette version to its works. Create a class Publication that stores the title (a string) and price (type float) of a publication. Derive the following two classes from the above Publication class: Book which adds a page count (int) and Tape which adds a playing time in minutes(float). Each class should have get_data() function to get its data from the user at the keyboard. Write the main() function to test the Book and Tape classes by creating instances of them asking the user to fill in data with get_data() and then displaying it using put_data().
- 9) Consider an example of declaring the examination result. Design three classes student, exam and result. The student has data members such as rollno, name. Create the class exam by inheriting the student class. The exam class adds data members representing the marks scored in 5 subjects. Derive the result from exam-class and it has own data members like total, avg.
- 10) Write a program for overloading of Unary ++ operator.
- 11) Write a program for overloading of Binary + operator.
- 12) Write a program of Virtual Functions.
- 13) Write a program of Abstract Classes.
- 14) Write a program to read and write from file.

Reference Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.

DCA-111, DCA-209 :- Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

- 1) Sports/NSS/NCC
- 2) Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI,
- 3) Cultural Club, etc.
- 4) Evaluation shall be based on rubrics for Part – A & B
- 5) Mentors/Faculty incharges shall maintain proper record student wise of each activity
- 6) conducted and the same shall be submitted to the department.