

Subject Name	L	T	P	Credit
Digital Electronics	3	1	-	4

### **Unit-I**

Number systems Decimal, Binary, Octal and Hexadecimal numbers, Codes: ASCII code, Hamming Code , BCD code, Gray code, Error detection & Correcting code , Excess-3 code, Binary arithmetic, 1's Complement and 2's Complement, Data types.

### **Unit-II**

Introduction to logic gates: AND,OR,NOT, Universal gates: NAND ,NOR ,Exclusive gates, Boolean algebra, Boolean Laws ,Demorgan's theorem, Karnaugh map method: SOP & POS , Minterm,Maxterm, Cases with don't care terms.

### **Unit-III**

Combinational circuits ,Half adder, Half subtractor, Full adder, Full subtractor circuits, Decoders, Encoders, Multiplexers, Demultiplexers, Program Control, Instruction Sequencing, Idea about Arithmetic circuits.

### **Unit-IV**

Sequential Circuits, Flip-flops,Classification of flip flop RS, D, JK flip flops, Master Slave JK flip flop, Introduction to Shift Registers: SISO, SIPO, PIPO, PISO, Data transfer, Mode of Data transfer, Synchronous and Asynchronous transfer, Handshaking.

### **Unit-V**

Introduction to various Semiconductors memories, RAM: SRAM,DRAM,MRAM and ROM and its type , Associative memory, Memory Hierarchy , Cache memory, Hit Ratio ,Mapping techniques.

### **Reference Books:**

1. BARTEE, "Digital Computer Fundamental" TMH Publication
2. MALVINO, " Digital Computer Electronics" TMH Publication
3. MORRIS MANO, " Computer System Architecture" PHI Publication

Subject Name	L	T	P	Credit
Client Side Web Technology	3	1	-	4

**Unit-I**

**Web Design:** Concepts of effective web design, Web design issues including Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Web site, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation.

**Unit-II**

**HTML :**Basics of HTML, formatting and fonts, commenting code, colour, hyperlink, lists, tables, images, forms, XHTML, Meta tags, Character entities, frames and frame sets, Browser architecture and Web site structure, Overview and features of HTML5. Combining HTML, CSS.

**Unit-III**

**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, CSS2, Overview and features of CSS3. XML: Introduction to XML, uses of XML, simple XML, and XML key components, DTD and Schemas, Using XML with application, Transforming XML using XSL and XSLT.

**Unit-IV**

**JavaScript :**Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: JavaScript and objects, Java Script own objects, the DOM and web browser environments, Manipulation using DOM, forms and validations.

**Angular JS:** Angular modules, directives, controllers, scopes, filter, services, events, forms, validation.

**Unit-V**

**Introduction:** Concept of WWW, Internet and WWW, HTTP Protocol: Ajax: Request and Response, Web browser and Web servers, Features of Web 2.0, **Ajax:** purpose – Traditional web application – Ajax Application – Alternatives purpose – Traditional web application – Ajax Application – Alternatives to AJAX.

**Ajax Framework** - Creating an XMLHttpRequest - Request Object – Use Prototype and XMLHttpRequest - Basic communication techniques with server - Interact with XML files in the Web Server – Implementing basic AJAX techniques.

**Reference Books:**

1. HTML and Web designing - Kris Jamsa and Konrad King
2. Ajax for Beginners - Ivon Bayross Sharanam Shah
3. Web Technology - N.P. Goplan, J.Akilandeswari
4. Internet Technology and Web Design - ISRD Group

Subject Name	L	T	P	Credit
Object Oriented Programming using C++	3	1	4	6

### Unit-I

History of C++, C++ Characteristics, Difference between C & C++, Concept of OOP, Benefits of OOP, Object and classes. Data Types, Variables: Definition, Declaration, Initialization and Scope. Operators, Loops and decision making, Structures and functions: Declaration and Definition.

### Unit-II

Overview of Array, Type of Array, Array within a class, Arrays of objects. Pointers: Declaring and Initializing Pointers, this Pointers, Arrays of Pointers, pointers to Object, Pointer to Function. Overview of Constructors and Destructors Parameterized Constructors, Multiple Constructors in a Class.

### Unit-III

Overview of Inheritance, Defining Base and Derived Classes, Type of Inheritance, Virtual Base Class, Abstract Class, public and private and protected inheritance, Difference between public, private and protected inheritance.

### Unit-IV

Operator overloading, function overloading, Friend functions Virtual functions, Pure virtual function, Polymorphism, Abstract Data Types, abstract base classes. Exception Handling: Overview of Exception handling Mechanism, Exception Hierarchies, Inside an Exception Handler.

### Unit-V

C++ I/O system, formatted I/O, creating insertors and extractors, file I/O basis, creating disk files and file manipulations using seekg(), seekp(), tellg() and tellp() functions, Storage Management: Static Memory allocation, Dynamic Memory Allocation: new and delete. Difference between static memory allocation and dynamic memory allocation

### Reference Books:

1. Robert Lafore; Object Oriented Programing in C++
2. Ken Barclay; Object Oriented design with C++
3. Balagurusamy; Object Oriented Programing in C++
4. Complete Reference C++

### List of Experiments

1. Program to print "Hello".
2. Program to swapping two variables using third variable.
3. Program to check entered alphabet is vowel or consonant.
4. Program to print ASCII value of any alphabet.
5. Program to implement call by value.
6. Program for call by reference.
7. Program to find greatest among three numbers using nested if.
8. Program for factorial using while loop.
9. Program to print reverse of a number using while loop.
10. Program for Fibonacci series.
11. Program for calculator using switch case.
12. Program to pass structure to the function.



13. Program to implement array of structure.
14. Program to implement an array.
15. Program to find maximum and minimum number entered in array.
16. Program for multidimensional array.
17. Program for implementing concept of pointer.
18. Program for demonstrate array of pointer.
19. Program to implement pointer to a function.
20. Program for increment and decrement operation in pointer.
21. Program for arithmetic operations in array.
22. Program to demonstrate constructor and destructor.
23. Program for parameterized overloading constructor.
24. Program for copy constructor.
25. Program to implement concept of inheritance.
26. Program to implement single level, multilevel, multiple, hybrid and hierarchical inheritance.
27. Program for function overloading and operator overloading.
28. Program for access private member of base class using friend function.

Subject Name	L	T	P	Credit
Data Structure using C	3	1	4	6

**Unit-I**

**Introduction:** Elementary data organization, Data Structure definition, Categories of data structures, Data structure operations, Applications of data structures, Abstract Data type, Algorithms complexity and time-space trade off, Big-O notation, Array, Pointers, functions.

**Stack:** Stack, Operations on stack, Recursion, Polish Notation: Infix, Prefix, Postfix, Conversion from one to another using stack, Multiple Stack.

**Queue:** Queue, Application of Queue, Circular Queue, Dequeue, Priority Queue.

**Unit-II**

**Linked List:** Singly Linked list, Operation on Singly Linked list, Header node, Stack and Queue Linked list. Doubly Linked List, Circular Linked list. Application Linked list,

**Unit-III**

**Trees:** definitions-height, depth, order, degree, parent and child relationship etc; Binary Trees, Basic operations on Binary tree, representation of binary tree, complete binary tree, almost complete binary tree; Tree traversals - preorder, inorder and postorder traversals, Threaded binary trees; **B-tree**- definition, order, degree, insertion & deletion operations, AVL Tree.

**Unit-IV**

**Searching and Sorting:** sequential search, binary search, sorting- Bubble sort, selection sort, insertion sort, quick sort, merge sort, Heap sort, Hash Table, Collision resolution Techniques.

**Unit-V**

**Graphs:** Introduction to graphs, Definition, Terminology, .Directed, Undirected & Representation of graphs, Graph Traversal-Depth first & Breadth first search. minimum spanning Tree, Shortest path algorithm; kruskals & dijkstras algorithm

**Reference Books:**

1. Fundamentals Of Data Structure, By S. Sawhney & E. Horowitz
2. Date Structure : By lipschuists (Schaum's .outline Series Mcgraw Hill publication)
3. Tennenbaum A.M. & others: Data Structures using C & C++; PHI
4. Yashwant Kanetkar, Understanding Pointers in C, BPB.

**List of Experiments**

1. Write a program to implement insertion () and deletion () operation in array.
2. Write a program for addition, subtraction, multiplication and transpose of matrix.
3. Write a program to create, initialize, assign and access a pointer variable.
4. Write a program to find factorial of number using recursion.
5. Write a program to swap two numbers using call by value and call by reference.
6. Write a program to implement Push () and Pop () operation in stack using array.



7. Write a program to implement insertion () and deletion () operation in queue using array.
8. Write a program to create 5 nodes in single linked list.
9. Write a program to insert an element at the end, beginning and at the end position in single linked list.
10. Write a program to delete an element at the end, beginning and at the end position in single linked list.
11. Write a program to implement stack using linked list.
12. Write a program to search an element in array using linear search and binary search.
13. Write a program to sort an array using insertion sort.
14. Write a program to sort an array using bubble sort.
15. Write a program to sort an array using selection sort.
16. Write a program to sort an array using quick sort.
17. Write a program to implement tree traversal technique.
18. Write a program to implement graph traversal technique.
19. Write a program to implement kruskal's and prim's algorithm.

Subject Name	L	T	P	Credit
Web Designing Lab	-	-	4	2

## List of Experiments

1. Create a webpage with HTML describing your department. Use paragraph and list tags.
2. Create links on the words e.g. "Wi-Fi" and "LAN" to link them to Wikipedia pages.
3. Insert an image and create a link such that clicking on image takes user to other page.
4. Change the background color of the page. At the bottom create a link to take user to the top of the page.
5. Create a table to show your class time-table.
6. Use tables to provide layout to your HTML page describing your university infrastructure.
7. Use `<span>` and `<div>` tags to provide a layout to the above page instead of a table layout.
8. Use frames such that page is divided into 3 frames 20% on left to show contents of pages, 60% in center to show body of page, remaining on right to show remarks.
9. Embed Audio and Video into your HTML web page.
10. Apply in-line CSS to change colors of certain text portion, bold, underline and italics certain words in your HTML web page. Also change background color of each Paragraph using in-line CSS.
11. Write all the above styling in CSS in different file (.css) and link it to your webpage such that changes made in CSS file are immediately reflected on the page. Group Paragraphs into single class and add styling information to the class in CSS.
12. Create a simple form to submit user input like his name, age, address and favorite subject, movie and singer.
13. Add form elements such as radio buttons, check boxes and password field. Add a submit button.
14. Design a webpage in bootstrap for shopping website.
15. Make a navigation bar in bootstrap.
16. Make an image slider in bootstrap.
17. Create a form in HTML and put validation checks on values entered by the user using JavaScript (such as age should be a value between 1 and 150).
18. Write a JavaScript program to display information box as soon as page loads.
19. Write a JavaScript program to change background color after 5 seconds of page load.



20. Write a JavaScript program to dynamically bold, italic and underline words and phrases based on user actions.
21. Write a JavaScript program to display a hidden div.
22. Using ideas from the above experiments, try to create a website for your department.
23. Create an e-book having left side of the page name of the chapters and right side of the page the contents of the chapters clicked on left side.
24. Write a program to change content of web page using Ajax.
25. Write a program to create XMLHttpRequest in Ajax.