C. U. SHAH UNIVERSITY

Faculty of Computer Science

Master of Computer Application (MCA)

(3 years – Six Semester Full Time Course)

Semester : II   **Subject Code :** MCAR201   **Name :** Object Oriented Programming Using C++

Sr. No.	Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
			Th	Tu	Pr	Total	Theory					Practical (Marks)			Total
							Sessional Exam		University Exam		Total	Pr/ Viva	TW	Total	
							Marks	Hrs	Marks	Hrs					
1	MCAR201	OBJECT ORIENTED PROGRAMMING USING C++	4	-	4	8	30	1.5	70	2.5	100	80	20	100	**200**

Objectives:

- The C++ language most demanding language as a tool for all types of work. How this important language is to be mastered and how to use this knowledge in building efficient and flexible code is one of the prime requirements today.
- The course helps to the students to improve the object oriented programming skills.

Prerequisites:

- Knowledge of C programming
- Programming concepts including algorithm designing and logic.

Course Outline:

Sr. No.	Course Contents	Number of Hours
1	**Introduction to Object Oriented Concepts** Object Oriented Concepts, Object, Class, Keywords, Identifiers, Data types, Constants, Features of C++,	4

	Differentiate Object Oriented V/s Procedure Oriented		
2	**Overview of C++ Language** Operators in C++, Conditional structure and looping structure, Differentiate struct v/s class, Differentiate union v/s class, Application of pointer in object oriented concepts, Pointer to objects and pointer to members of class, The local classes, Assigning objects		5
3	**Functions Utility in object oriented Approach** Function Introduction, The inline function, Default arguments to the function, Object as a parameter, Call by reference and return by reference, Function Prototyping, Function overloading, Friend Function, utility of friend function with examples, Constant and volatile function, Static function, Private and public function, Function using pointer		5
4	**Application of Constructors & Destructors in Object oriented Concepts** Constructor, Application of Constructor & Rule to define the constructor, Types of Constructor, Explicit constructor, Parameterized constructor, Multiple Constructor(With Example), Dynamic Initialization, Constructor with dynamic allocation, Copy constructor.		4
5	**Operator Overloading & User define function:** Arithmetic operator overloading, Unary , Binary Operator Overloading, Assignment Operator Overloading, Subscript operator overloading, Operator overloading with Friend Function, The need for user defined conversion, Four different cases where user defined conversions are needed, Comparison of both the methods of conversion.		5
6	**Templates** Use of Templates, Define Function Templates, Function Templates with Generic & Non Generic Types, Define Class Templates, Specialization In templates, Define Class and Generic Data Types, Static Data Member in Templates. Export, typename Keyword.		5
7	**Inheritance** Application of Inheritance, Defining derived class using single base class, Define Different Types of Derivation using Access modifiers, The implementation of inheritance in the C++ object model,		3

8	**Runtime Polymorphism:**	4
	Difference Between Compile time and Run time polymorphism, Pointers to Objects, This pointer, Compatibility of Derived and base class pointers, The sub object concept, Virtual functions, Static invocation of virtual function, Default arguments to virtual functions, Virtual destructors, Pure virtual functions, RTTI.	
9	**Exception Handling**	3
	Introduction, Exception Handling, Mechanism, Try, Catch and throw mechanism, Re throwing an exception , Terminate and Unexpected functions, Drawbacks of exception handling approach, The exception Class	
10	**IO Streams**	4
	Stream, Difference of C and C++ IO Stream, The C++ Predefined streams, Formatting IO, IOS Members, Manipulators, Creating own manipulator	
11	**Using Files for IO**	4
	Why IO is special, Different File Modes, File Handling, Create, Update, Delete, Files, Random Access using seek, IO Modes, Handling File Control Errors	
12	**Namespaces**	2
	Introduction and need of name space, Defining namespaces, Extending the namespace	
13	**The Standard Template Library**	2
	Introduction, Generic Programming Technique, Generic Software Designing technique, Components, Generic Algorithms, Iterators, Containers, Algorithms	

The first row (top of page) reads: The Access Control, Declaration, The multiple-inheritance, Abstract classes, Composite objects

List of Practical:

1.	Write a C++ program to find the sum of individual digits of a positive integer.
2.	A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.
3.	Write a C++ program to generate all the prime numbers between 1 and n ,where n is a value

	supplied by the user.
4.	Write C++ programs that use both recursive and non-recursive functions
	a. To find the factorial of a given integer.
	b. To find the GCD of two given integers.
	c. To find the nth Fibonacci number.
5.	Write a C++ program that uses a recursive function for solving Towers of Hanoi problem.
6.	Write a C++ program that uses functions
	a. To swap two integers.
	b. To swap two characters.
	c. To swap two real. Note: Use overloaded functions.
7.	Write a C++ program to find both the largest and smallest number in a list of integers.
8.	Write a C++ program to sort a list of numbers in ascending order.
9.	Write a C++ program that uses function templates to solve problems-7&8.
10.	Write a C++ program to sort a list of names in ascending order.
11.	Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:
	a) Reading a matrix. c) Addition of matrices.
	b) Printing a matrix. d) Subtraction of matrices.
	e) Multiplication of matrices.
12.	Implement the matrix ADT presented in the problem-11 using overloaded operators (<<, >>, +, -, *) and templates.
13.	Implement the complex number ADT in C++ using a class. The complex ADT is used to represent complex numbers of the form c=a+ib, where a and b are real numbers. The operations supported by this ADT are:
	a) Reading a complex number. d) Subtraction of complex numbers.
	b) Writing a complex number. e) Multiplication of complex numbers.
	c) Addition of Complex numbers. f) Division of complex numbers.
14.	Write a C++ program that overloads the + operator and relational operators (suitable) to perform the following operations:
	a) Concatenation of two strings. B)Comparison of two strings.
15.	Implement the complex number ADT in C++ using a class. The complex ADT is used to represent complex numbers of the form c=a+ib, where a and b are real numbers. The operations supported by

	this ADT are:
	a) Reading a complex number. d) Subtraction of complex numbers.
	b) Writing a complex number. e) Multiplication of complex numbers.
	c) Addition of Complex numbers. f) Division of complex numbers.
	Note: 1. overload << and >> operators in part a and part b.
	2. overload +, - , * , / operators in parts c, d, e and f.
16.	Write a template based C++ program that determines if a particular value occurs in an array of values.
17.	Write a C++ program that uses functions to perform the following operations: a. Insert a sub-string into the given main string from a given position. b. Delete n characters from a given position in a given string.
18.	Write a C++ program that uses a function to reverse the given character string in place without any duplication of characters.
19.	Write a C++ program to make the frequency count of letters in a given text.
20.	Write a C++ program to count the lines, words and characters in a given text.
21.	Write a C++ program to determine if the given string is a palindrome or not.
22.	Write a C++ program to make frequency count of words in a given text.
23.	Write a C++ program that displays the position or index in the string S where the string t begins , or -1 if S doesn't contain t.
24.	2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C++ program to find the 2's complement of a binary number.
25.	Write a C++ program that counts the number of 1 bit in a given integer.
26.	Write a C++ program to generate Pascal's triangle.
27.	Write a C++ program to construct of pyramid of numbers.
28.	Write a C++ program to compute the Sine series.
29.	Write a C++ program that converts Roman numeral into an Arabic integer.
30.	Write a C++ program which converts a positive Arabic integer into its corresponding Roman Numeral.
31.	Write a C++ program to display the contents of a text file.
32.	Write a C++ program which copies one file to another.
33.	Write a C++ program to that counts the characters, lines and words in the text file.

34.	Write a C++ program to change a specific character in a file.
35.	Write a C++ program to reverse the first n characters in a file.
36.	Write a C++ program that uses a function to delete all duplicate characters in the given string.
37.	Write a C++ program that uses a function to convert a number to a character string.
38.	Write a C++ program that uses a recursive function to find the binary equivalent of a given non-negative integer n.
39.	Write a C++ program to generate prime numbers up to n using Sieve of Eratosthenes method.
40.	Write a C++ program a) To write an object to a file. b) To read an object from the file.
41.	Write C++ programs that illustrate how the following forms of inheritance are supported: a) Single inheritance b) Multiple inheritance c) Multi level inheritance d) Hierarchical inheritance
42.	Write a C++ program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.
43.	Write a C++ program that illustrates how run-time polymorphism is achieved using virtual functions.
44.	Write a C++ program that illustrates the role of virtual base class in building class hierarchy.
45.	Write a C++ program that illustrates the role of abstract class in building class hierarchy.

Learning Outcomes:

- Students should be able to understand and appreciate the Object Oriented approach of Programming
- Students should be able to solve problems given to him/her using C++ with keeping balance between efficiency and flexibility

Books Recommended:

- "Object Oriented programming with C++", E. Balagurusamy, TMH
- "Complete Reference C++ ", Herbert Schildt McGraw Hill Publications
- "Computer Science- A Structured approach using C++", Forouzan ,Gilburg, THOMSON Books
- "Object Oriented programming in C++", Robert Lafore, Pearson Education
- "C++ Primer", Stanley Lippmann, Pearson Education
- "The C++ Programming Language", Bjarne Stroustrup, Pearson Education
- "Effective C++", Scott Mayer Addison Wesley

- "OOP with C++",S .Sahay,Oxford Higher Education.
- "C++ and OOP Paradigm", D.Jana,2nd Edition, PHI

Faculty of Computer Science

Master of Computer Application (MCA)

(3 years – Six Semester Full Time Course)

Semester : II   **Subject Code: MCAR202**   **Name: Data Structures**

Sr. No.	Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
			Th	Tu	Pr	Total	Theory					Practical (Marks)			Total
							Sessional Exam		University Exam		Total	Pr/ Viva	TW	Total	
							Marks	Hrs	Marks	Hrs					
1	MCAR202	DATA STRUCTURES	4	-	4	8	30	1.5	70	2.5	100	80	20	100	**200**

Objectives:

- To develop proficiency in the specification, representation, and implementation of Data Structures.
- To get a good understanding of applications of Data Structures.
- To develop a base for advanced computer science study.

Prerequisites:

- Programming language like C to implement Data structures methods on computing.

Course Outline:

Sr. No.	Course Contents	Number of Hours
1	**Introduction to Data Structures** Primitive Data Structures, Non Primitive Data Structure, String Manipulation & Pattern Matching, Storage Representation of Strings, Text Handling , KWIC Indexing	06
2	**Linear Data Structures** • Arrays, Storage Structure for Arrays, Structures & Arrays of Structures , Stack, Applications of Stacks, Polish Notation Conversion, Operation of Stacks • Queues, Circular Queue, Double Ended Queue, Simulation, Priority Queues	15

	• Pointers & Linked Allocation , Linked Linear Lists , Circularly Linked Linear Lists , Doubly Linked Linear Lists, Applications of Linked Linear Lists	
3	**Nonlinear Data Structures** • Trees , Binary Tree, Operations on Binary Trees , Storage Representation & Manipulation of Binary Trees, Conversion of General Tree to Binary Trees, Sequential & Other Representation of Trees , Manipulation of Arithmetic Expression , Sparse Matrices • Graphs, Matrix Representation of Graphs , Graphic Representation of List Structures , Other Representation of Graphs ,Breadth First Search (BFS) , Depth First Search (DFS) , Spanning Trees, Prim's Algorithm, Dijkastra's Algorithm	15
4	**Sorting Techniques** Introduction , Insertion Sort, Selection Sort , Bubble Sort , Merge Sort , Heap Sort , Quick Sort , Radix Sort , Shell Sort	07
5	**Searching Techniques** Introduction, Sequential Searching , Binary Searching , Search Trees – Height Balanced , Weight Balanced	05
	Total hours	**48**

List of Practical:

SNo.	Practical Contents
1	W.A.P to get the value of array through pointer and print it in reverse order.
2	W.A.P to perform the following operation on a stack (1) push (2) pop (3) peep
3	W.A.P to convert an infix arithmetic expression (parenthesize / unparenthesized) into postfix notation.
4	W.A.P to perform the following operation on a simple queue using an array. (1) insert an element (2) delete an element (3) display an element
5	W.A.P to perform the following operation on simple queue using pointer. (1) insert an element (2) delete an element (3) display an element
6	W.A.P to perform the following operation on a circular queue. (1) insert an element (2) delete an element (3) display an element
7	W.A.P to perform the following operation on a priority queue.

	(1) insert an element (2) delete an element (3) display an element
8	W.A.P to implement Double ended queue(Input Restricted / Output Restricted)
9	W.A.P to create a sorted singly linked list.
10	W.A.P to perform the following operations on a singly linked list. (1) insert an element (2) delete an element (3) Find the elements of the list, (4) Count number of the nodes in the linked list (5) Reverse the linked list, (6) display an element (7) Make a copy of the given linked list (8) Merge two linked list, (9) Find the union of the two given linked list (10) Find the intersection of the two given linked list.
11	W.A.P to add two polynomials in two variables
12	W.A.P to subtract two polynomials in two variables
13	W.A.P to implement sparse Matrix using an array
14	W.A.P to perform the following operations on a doubly linked list. (1) insert an element (2) delete an element (3) Find the elements of the list,(4) Count number of the nodes in the linked list (5) Reverse the linked list,(6) display an element (7) Make a copy of the given linked list (8) Merge two linked list,(9) Find the union of the two given linked list (10) Find the intersection of the two given linked list.
15	W.A.P to create a binary search tree and print it's elements in inorder traversal
16	W.A.P to create a binary search tree and print it's elements in preorder traversal
17	W.A.P to create a binary search tree and print it's elements in postorder traversal
18	W.A.P to make another copy of a given binary search tree
19	W.A.P to search an element in a given binary search tree
20	W.A.P to create a graph in a adjacency list structure, traverse it in BFS
21	W.A.P to create a graph in a adjacency list structure, traverse it in DFS
22	W.A.P to sort a given list using (1) Insertion Sort (2) Bubble Sort (3) Selection Sort (4) Merge Sort
23	W.A.P to sort a given list using (1) Heap Sort (2) Shell Sort (3) Radix Sort
24	W.A.P to search an element in a given list using (1) Linear search (2) Binary search

Learning Outcomes:

- Understand the importance of data and be able to identify the data requirements for an application.
- Have a solid understanding and practical experience of algorithmic design and implementation.

- Understand the issues involved in algorithm complexity and performance.
- Have a comprehensive knowledge of the data structures and algorithms on which file structures and data bases are based.

Books Recommended:

- "An Introduction to Data Structures with Applications", Jean-Paul Tremblay, Paul G. Sorenson, Tata McGraw-Hill, 2nd Edition, (2007)
- "Introduction to Algorithm", Cormen, Leiserson, Rivest, Stein, PHI(2003), 2nd Edition

Additional References:

- "Classic Data Structures ", Debasis Samanta, PHI
- "Data Structures Using C++", Varsha H. Patil, Oxford.
- "Data Structure Using C and C++", Y kanitkar, PHI

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Master of Computer Application (MCA)

(3 years – Six Semester Full Time Course)

Semester : II **Subject Code: MCAR203** **Name: Statistical Methods**

Sr. No.	Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
			Th	Tu	Pr	Total	Theory					Practical (Marks)			Total
							Sessional Exam		University Exam		Total	Pr/ Viva	TW	Total	
							Marks	Hrs	Marks	Hrs					
1	MCAR203	STATISTICAL METHODS	4	-		4	30	1.5	70	2.5	100				**100**

Objectives:

- To develop the skills for data interpretation and representation in excellent fashion.
- To understand the Measure of Central Tendency, Probabilities, Regression, and Correlation methods and its real life applications.
- To understand time series analysis and its application to forecasting

Prerequisites: None

Course Outline:

Sr. No.	Course Contents	Number of Hours
1	**Statistics What and Why** Introduction to Statistics; Origin and growth of Statistics Statistics Defied, Function of Statistics, Scope of Statistics Limitations of Statistics, Statistics Methods vs. Experimental Methods	10
2	**Measures of Central Tendency** Average defined, Objective of Average, Requisites of Good Average	10

	Types of Average Arithmetic Mean: Calculation of Simple Arithmetic Mean, Calculation of Weighted Arithmetic Mean Median Mode Geometric Mean Harmonic Mean General Limitations of an Average		
3	**Measure of Dispersion** Introduction Dispersion Defined Range: Definition, merits and demerits. Semi-interquartile range (Quartile deviation). Mean deviation: Definition, merits and demerits, minimalists property (without proof). Mean square deviation: Definition, minimalists property of mean square deviation (with proof), Variance and standard deviation: Definition, merits and demerits, effect of change of origin and scale, combined variance (derivation for 2 groups), combined standard deviation, generalization for n groups. Measures of dispersion for comparison: coefficient of range, coefficient of quartile Deviation and coefficient of mean deviation, coefficient of variation (C.V.)	10	
4	**Correlation Analysis** Introduction Significance of the study of Correlation Correlation and Causation Types of Correlation: Positive and Negative Correlation , Simple, Partial and Multiple Correlations, Linear and Non-Linear Correlation, Methods of Studying Correlation Scatter Diagram Method Graphics Method: Direct Method of Finding out Correlation: Coefficient of Correlation and Probable Error, Conditions for Use of Probable Error, Coefficient Determination	9	
5	**Regression Analysis**	9	

Uses of Regression Analysis	
Difference between Correlation and Regression Analysis	
Regression Lines	
Regression Equations	
Regression Equation on Y on X	
Regression Equation on X on X	
Deviation taken from Arithmetic Means of X and Y	
Deviation taken from Assumed Means	
Graphing Regression Lines	
Standard Error of Estimate	
Limitations of Regression Analysis	
Total hours	**48**

Learning Outcomes:

- Ability to apply statistical techniques in decision making in solving real-world problems
- Ability to use computers to analyze the data

Books Recommended:

- "Statistics for Business and Economics", Anderson, Sweeney & Williams, Cengage Learning, 11th Edition
- "Statistics Concepts and Applications", Nabendu Pal & Sahadeb Sarkar, PHI.
- "Statistical Methods", S P Gupta, S Chand.

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Master of Computer Application (MCA)

(3 years – Six Semester Full Time Course)

Semester : II **Subject Code:** MCAR204   **Name:** Enterprise Resource Planning

Sr. No.	Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
			Th	Tu	Pr	Total	Theory					Practical (Marks)			Total
							Sessional Exam		University Exam		Total	Pr/ Viva	TW	Total	
							Marks	Hrs	Marks	Hrs					
1	MCAR204	ENTERPRISE RESOURCE PLANNING	4	-	-	4	30	1.5	70	2.5	100				**100**

Objectives:

- The objective of this course is to provide awareness about the ERP concepts and the technologies, which bridges gap between person, business and customer.
- The fitting requirements of ERP packages in different industrial domains are also emphasized.
- The course also helps the business to implementing ERP in the Corporate house and companies.

Pre-requisites: None

Course Outline:

Sr. No.	Course Contents	Number of Hours
1	**ERP Introduction** The role of Enterprise, Business Modeling, Myths about ERP, Basic ERP Concepts, Intangible benefits of ERP, Justifying ERP investment, Risks of ERP, Benefits of ERP	4
2	**Business Process Reengineering**, Data ware Housing, Data Mining, Online	6

	Analytic Processing(OLAP), Product Life Cycle Management(PLM),LAP, Supply chain Management.	
3	**ERP Marketplace and Marketplace Dynamics**: Market Overview, Marketplace Dynamics, The Changing ERP Market. ERP- Functional Modules: Introduction, Functional Modules of ERP Software, Integration of ERP, Supply chain and Customer Relationship Applications.	14
4	**ERP Implementation Basics,** ERP Implementation Life Cycle, Role of SDLC/SSAD, Object Oriented Architecture, Consultants, Vendors and Employees	8
5	**ERP & E-Commerce, Future Directives-** in ERP, ERP and Internet, Critical success and failure factors, Integrating ERP into organizational culture. Using ERP tool: either SAP or ORACLE format to case study	6
6	**ERP for Business** ERP for manufacturing Industry, Automobile Industry, Pharma, FMCG, Mining industry ERP for Service Industry: retail, healthcare, Educational, Institution, Telecom, banks, Insurance companies	10
	Total hours	**48**

Learning Outcomes:
- At the end of the course the students appreciate that Computer aided design & programming technologies provide a valuable resource tool for the futuristic design.
- Students can focus on changes brought about in the product cycles with the advent of CAD systems.
- Theoretical: Students can Learn Theoretical & practical aspect ofERP & Accounts.
- Practical: Students can able to solve problems from Journal Entries to Final Accounts.

Books Recommended:
- "ERP Demystified", Alexis Leon, Tata McGraw Hill
- "Enterprise wide Resource Planning", Rahul V. Altekar, Tata McGraw Hill,
- "Enterprise Resource Planning – Concepts and Practice", V.K. Garg and Venkitakrishnan N K, PHI

"Concepts in Enterprise Resource Planning", Joseph A Brady, Ellen F Monk, Bret Wagner, Thompson Course Technology

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Semester : II **Subject Code: MCAR205** **Name: Web Technology**

Sr. No.	Subject Code	Name of the Subject	Teaching Scheme (Hours)				Evaluation Scheme								
			Th	Tu	Pr	Total	Theory					Practical (Marks)			Total
							Sessional Exam		University Exam		Total	Pr/ Viva	TW	Total	
							Marks	Hrs	Marks	Hrs					
1	MCAR205	WEB TECHNOLOGY	4	-	2	6	30	1.5	70	2.5	100	40	10	50	**150**

Objectives:

- The internet has drastically changed the way we communicate. As web technology dissolves the world's borders, a new "global community" has emerged.
- The course will focus on methods of using interconnected networks to effectively distribute text and information.
- The course will focus on overall site design strategies, explore web usability/interface problems, and outline effective solutions.
- Students will learn and implement HTML to construct a website with consideration to course topics.

Prerequisites:

- Basic knowledge of computer and Internet Website surfing and its controls.

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Course Outline:

Sr. No.	Course Contents	Number of Hours
1	**Introduction** The World Wide Web (WWW) , HTML History, Hypertext and Hypertext Markup Language	2
2	**HTML Documents** Dividing the document into 2 parts: Headers, Body Tags: Format, Representing 2 types of tag (odd and even) Elements of an HTML Document: Text Elements, Tag Elements, Special Character elements	2
3	**Structural elements of HTML documents** Header tags Body tags: Paragraphs , Titles, Numbered list, Non-Numbered lists, Definition lists	2
4	**Formatting HTML Documents** Logical styles (source code, text enhancements, variables) Physical Styles (Bold, Italic, underlined, crossed)	1
5	**Managing images in html** Image format (quality, size, type, …) Importing images (scanners) Tags used to insert images Frames	3
6	**tables in HTML documents** Tags used in table definition Tags used for border thickness Tags used for cell spacing Tags used for table size Dividing table with lines Dividing lines with cells Cell types	3
7	**Hypertext and Link in HTML Documents** URL/FTP/HTTP, Types of links, Link Tags Links with images and buttons	2

	Links that send email messages	
8	**Special effects in HTML documents** Text fonts , Sensitive Images, Tip tables, Page background: Variable, Fixed Rotating messages (Marquee), Counters	2
9	**Multimedia** Audio files and acceptable formats (AIFF, AU, MIDI, WAVE) Video files and acceptable formats (MPEG, Quick Time, Video for Windows).	3
10	**managing forms** Interactive forms, Creating data entry forms, Calling CGI scripts for modifying entered data, Calling programs that use data, Creating output documents	4

List of Practical:

Sr. No.	Course Contents
1	HTML Basic- A very simple HTML document HTML headings HTML paragraphs HTML links HTML images
2	HTML Headings- HTML headings Insert comments in the HTML source code Insert horizontal lines
3	HTML Paragraphs- HTML paragraphs More paragraphs The use of line breaks Poem problems (some problems with HTML formatting)
4	HTML Text Formatting- Text formatting Preformatted text (how to control line breaks and spaces) Different computer-output tags Insert contact information Abbreviations and acronyms Text direction

	Long and short quotations	
	How to mark deleted and inserted text	
5	HTML Styles- Style HTML elements	
	Style background color	
	Style font, color, and size	
	Style alignment of text	
	Set the font of text	
	Set the font size of text	
	Set the font color of text	
	Set the font, font size, and font color of text	
	Using styles in HTML	
	Link that is not underlined	
	Link to an external style sheet	
6	HTML Links - How to create hyperlinks	
	Use an image as a link	
	Open link in a new browser window	
	Jump to another part of a document (on the same page)	
	Break out of a frame	
	How to link to a mail message (will only work if you have mail installed)	
	Another mailto link	
7	HTML Images- Insert images	
	Insert images from another folder or another server	
	Aligning images	
	Let the image float to the left/right of a paragraph	
	Make a hyperlink of an image	
	Create an image-map, with clickable regions	
8	HTML Tables- Simple tables	
	Tables without borders	
	Table headers	
	Table with a caption	
	Table cells that span more than one row/column	
	Tags inside a table	
	Cell padding (control the white space between cell content and the borders	

	Cell spacing (control the distance between cells)
9	HTML Lists-An unordered list
	An ordered list
	Different types of ordered lists
	Different types of unordered Lists
	Nested list, Nested list 2
	Definition list
10	HTML Forms and Input- Create text fields
	Create password field, Checkboxes, Radio buttons
	Simple drop-down list
	Drop-down list with a pre-selected value
	Textarea (a multi-line text input field)
	Create a button
	Draw a border around form-data
	Form with text fields and a submit button
	Form with checkboxes and a submit button
	Form with radiobuttons and a submit button
	Send e-mail from a form
11	HTML IFrame - Inline frame (a frame inside an HTML page)
12	HTML head Elements - Specify a title for a document
	One default URL and target for all links on a page
	Provide metadata for a document

Learning Outcomes:

- Fluency with HTML
- Grasp the fundamentals of the client/server relationship and internet infrastructure
- Evaluate website design and information
- Interpret and assimilate audience variables into effective online communication

Books Recommended:

- "HTML black book", Holzner
- "Web Enabled Commercial Application Development Using HTML, DHTML, PERL, Java Script", Ivan Bayross, BPB Publications, Revised Edition