VIDYASAGAR UNIVERSITY

Midnapore, West Bengal

PROPOSED CURRICULUM & SYLLABUS (DRAFT) OF

BACHELOR OF COMPUTER APPLICATION- BCA (HONOURS)

4-YEAR UNDERGRADUATE PROGRAMME

(w.e.f. Academic Year 2023-2024)

Based on

Curriculum & Credit Framework for Undergraduate Programmes (CCFUP), 2023& NEP, 2020

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VIDYASAGAR UNIVERSITY
BACHELOR OF COMPUTER APPLICATION (HONOURS)
(under CCFUP, 2023)

Level	YR.	SEM	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
								CA	ESE	TOTAL
BCA (Hons.)	1st	I	**SEMESTER-I**							
			Major-1	BCAHMJ101	T:C Programming P: C Programming Lab	4	3-0-1	15	60	75
			SEC	BCASEC01	P: Web Designing	3	0-0-3	10	40	50
			AEC	AEC01	Communicative English -1 (***common for all programmes***)	2	2-0-0	10	40	50
			MDC	MDC01	Multidisciplinary Course -1 (***to be chosen from the list***)	3	3-0-0	10	40	50
			VAC	VAC01	ENVS (***common for all programmes***)	4	2-0-2	50	50	100
			Minor-1	BCAMI01	P: PC Software	4	3-1-0	15	60	75
					Semester-I Total	20				400
		II	**SEMESTER-II**							
			Major-2	BCAHMJ102	T: Digital Electronics P: Digital Electronics Lab	4	3-1-0	15	60	75
			SEC	BCASEC02	P: XML Programming	3	0-0-3	10	40	50
			AEC	AEC02	MIL-1 (***common for all programmes***)	2	2-0-0	10	40	50
			MDC	MDC02	Multi Disciplinary Course-02 (***to be chosen from the list***)	3	3-0-0	10	40	50
			VAC	VAC02	Value Added Course-02 (***to be chosen from the list***)	4	4-0-0	10	40	50
			Minor-2	BCAMI02	T: Computer Fundamental	4	3-1-0	15	60	75
			Summer Intern.	CS	Community Service	4	0-0-4	-	-	50
					Semester-II Total	24				400
					TOTAL of YEAR-1	44				800

MJ = Major, MI = Minor Course, SEC = Skill Enhancement Course, AEC = Ability Enhancement Course, MDC = Multidisciplinary Course, VAC = Value Added Course; CA= Continuous Assessment, ESE= End Semester Examination, T = Theory, P= Practical, L-T-P = Lecture-Tutorial-Practical, MIL = Modern Indian Language, ENVS = Environmental Studies

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MAJOR (MJ)

MJ-1: C Programming **Credits 04(Full Marks: 75)**

OBJECTIVE OF THE COURSE

The objectives of this course are to make the student understand programming language, programming, concepts of Loops, reading a set of Data, stepwise refinement, Functions, Control structure, Arrays. After completion of this course the student is expected to analyze the real-life problem and write a program in 'C' language to solve the problem. The main emphasis of the course will be on problem solving aspect i.e., developing proper algorithms.

- After completion of the course the student will be able to
- Develop efficient algorithms for solving a problem.
- Use the various constructs of a programming language viz. conditional, iteration and recursion.
- Implement the algorithms in "C" language.
- Use simple data structures like arrays, stacks and linked list in solving problems.
- Handling File in "C".

MJ-1T: Programming in C **Credits 03**

Course contents:

Module- I Introduction to Programming 04 Hrs.

The Basic Model of Computation, Algorithms, Flow-charts, Programming Languages, Compilation, Linking and Loading, Testing and Debugging, Documentation

Module- II Algorithms for Problem Solving 10 Hrs.

xchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reversing digits of an integer, GCD (Greatest Common Division) of two numbers, Test whether a number is prime, Organize numbers in ascending order, Find square root of a number, factorial computation, Fibonacci sequence, Evaluate 'sin x' as sum of a series, Reverse order of elements of an array, Findlargest number in an array, Print elements of upper triangular matrix, multiplication of two matrices, Evaluate a Polynomial

Module- III Introduction to 'C' Language 04Hrs.

Character set, Variables and Identifiers, Built-in Data Types, Variable Definition, Arithmetic operators and Expressions, Constants and Literals, Simple assignment statement, Basic input/output statement, Simple 'C' programs.

Module- IV Conditional Statements and Loops 07 Hrs.

Decision making within a program, Conditions, Relational Operators, Logical Connectives, if statement, if-else statement, Loops: while loop, do while, for loop, Nested loops, Infinite loops, Switch statement, structured Programming.

Module- V Arrays 06 Hrs.

One dimensional array: Array manipulation; Searching, Insertion, Deletion of an element from an array; Finding the largest/smallest element in an array; Two dimensional arrays, Addition/Multiplication of two

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matrices, Transpose of a square matrix; Null terminated strings as array of characters, Standard library string functions

Module- VI Functions **06 Hrs.**

Top-down approach of problem solving, Modular programming and functions, Standard Library of C functions, Prototype of a function: Formal parameter list, Return Type, Function call, Block structure, passing arguments to a Function: call by reference, call by value, Recursive Functions, arrays as function arguments.

Module- VII Storage Classes **03 Hrs.**

Scope and extent, Storage Classes in a single source file: auto, extern and static, register, Storage Classes in multiple source files: extern and static

Module- VIII Structures and Unions **06 Hrs.**

Structure variables, initialization, structure assignment, nested structure, structures and functions, structures and arrays: arrays of structures, structures containing arrays, unions

Module- IX Pointers **06 Hrs.**

Address operators, pointer type declaration, pointer assignment, pointer initialization, pointer arithmetic, functions and pointers, Arrays and Pointers, pointer arrays, pointers and structures, dynamic memory allocation.

Module- X Self-Referential Structures and Linked Lists **04 Hrs.**

Creation of a singly connected linked list, traversing a linked list, Insertion into a linked list, Deletion from a linked list

Module- XI File Processing **04 Hrs.**

Concept of Files, File opening in various modes and closing of a file, reading from a file, writing onto a file

MJ-1P: Programming in C Lab **Credits 01**

1. Write a program to check a year is Leap year or not.
2. Write a program to solve the following Quadratic equation
   $Ax^2 + Bx + C = 0$
3. Write a program to print the sum and product of digits of an integer.
4. Write a program to find the reverse a number and then check the number is palindrome or not.
5. Write a program to compute the sum of the first n terms of the following series
   $S = 1+1/2+1/3+1/4+\ldots\ldots$
6. Write a program to compute the sum of the first n terms of the following series
   $S = 1-2+3-4+5\ldots\ldots\ldots\ldots\ldots$
7. Write a program to find the value of cosxfrom the following Cos series:
   $Cosx = 1-x^2/2!+x^4/4!-\ldots\ldots\ldots\ldots\infty$
8. Write a program to find the GCD and LCM of two numbers.
9. Write a program to display Armstrong numbers between the range a to b.
10. Write a program to display Strong numbers between the range a to b.

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11. Write a program to convert a Decimal number into its equivalent Binary number.
12. Write a program to convert a Binary number into its equivalent Decimal number.
13. Write a program to convert a Binary number into its equivalent Octal number.
14. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
15. Write a program to compute the factors of a given number.
16. Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
17. Write a program to count number of vowels, consonants, digits and blank spaces in a line of text.
18. Write a macro that swaps two numbers. WAP to use it.
19. Write a program in which a function is passed address of two variables and then alter its contents.
20. Write a program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
*********
```

21. Write a program to print the pyramid of numbers as follows(take number of lines from user):

```
1
121
12321
1234321
123454321
```

22. Write a program to display Fibonacci series (i) using recursion, (ii) using iteration
23. Write a program to calculate Factorial of a number (i) using recursion, (ii) using iteration
24. Write a program to calculate GCD of two numbers (i) with recursion (ii) without recursion.
25. Write a program to perform following actions on an array entered by the user:
    i) Print the even-valued elements
    ii) Print the odd-valued elements
    iii) Calculate and print the sum and average of the elements of array
    iv) Print the maximum and minimum element of array
    v) Remove the duplicates from the array vi) Print the array in reverse order
26. Write a program to arrange the list of n numbers in ascending order.
27. Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
28. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
29. Write a menu driven program to perform following operations on strings:
    a) Show address of each character in string
    b) Concatenate two strings without using strcat() function.
    c) Concatenate two strings using strcat() function.
    d) Compare two strings.

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e) Calculate length of the string (use pointers).
f) Convert all lowercase characters to uppercase.
g) Convert all uppercase characters to lowercase.
h) Calculate number of vowels.
i) Reverse the string

30. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
31. Write a program to retrieve the student information from file created in previous question and print it in following format: Roll No. Name Marks
32. Copy the contents of one text file to another file, after removing all whitespaces.
33. Write a program that will read 10 integers from user and store them in an array. Implement array using pointers. The program will print the array elements in ascending and descending order.

Suggested Readings:

1. Byron S Gottfried "Programming with C" Second edition, Tata McGrawhill, 2007 (Paperback)
2. R.G. Dromey, "How to solve it by Computer", Pearson Education, 2008.
3. Kanetkar Y, "Let us C", BPB Publications, 2007.
4. Hanly J R &Koffman E.B, "Problem Solving and Programm design in C", Pearson Education, 2009.

Supplementary Reading

1. E. Balagurusamy, "Programming with ANSI-C", Fourth Edition,2008, Tata McGraw Hill.
2. Venugopal K. R and Prasad S. R, "Mastering 'C'", Third Edition, 2008, Tata McGraw Hill.
3. B.W. Kernighan & D. M. Ritchie, "The C Programming Language", Second Edition, 2001, Pearson Education
4. ISRD Group, "Programming and Problem Solving Using C", Tata McGraw Hill, 2008.
5. PradipDey,ManasGhosh, "Programming in C", Oxford University Press, 2007.

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MJ-2: Digital Electronics **Credits 04(Full Marks: 75)**

OBJECTIVE OF THE COURSE

The objective of digital logic design is to design and create digital circuits that perform specific functions and operations using digital logic gates. It involves the design and analysis of combinational and sequential circuits, which form the building blocks of digital systems such as processors, memory units, and control units.

MJ-1T: Digital Electronics **Credits 03**

Module-I Number systems: **10 Hrs.**

Positional number systems; Binary, Octal, Hexadecimal and Decimal number systems; conversion of a number in one system to the other; Representation of signed numbers-signed magnitude, one's complement, 2's complement representation techniques, Merits of 2's complement representation scheme; Various binary codes- BCD, excess -3, Gray code, ASCII, EBCDIC, Parity bits; Binary arithmetic-addition, subtraction, multiplication and division of unsigned binary numbers.

Module-II Boolean algebra: **10 Hrs.**

Fundamental of Boolean Expression: Definition of Switching Algebra, Basic properties of Switching Algebra, Huntington's Postulates, Basic Logic gates: (OR, AND, NOT); Universal Logic Gates: (NAND & NOR); Basic logic operations: logical sum (OR), logical product (AND), complementation (NOT), Anti coincidence (EX-OR) and coincidence (EX-NOR) operations: Truth tables of Basic gates; Boolean Variables and Expressions; De-Morgan's theorem; Boolean expressions Simplification- Algebraic technique, Karnaugh map technique, 3 variable and 4 variable Karnaugh map.

Module-III Combinational Circuits: **13 Hrs.**

Half Adder, Full Adder (3-bit), Half Subtractor, Full Subtractor (3-bit) and construction using Basic Logic Gates (OR, AND, NOT) and Universal Logic Gates (NAND & NOR), Multiplexer, Encoders, Demultiplexer and Decoder circuits, Seven Segment Display. BCD adder/ subtract or comparator; parity generators, code converters, priority encoders.

Module-IV Sequential Circuits: **12 Hrs.**

Latch, RS, D, JK, T Flip Flops; Race condition, Master Slave JK Flip Flop; Registers: Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel input Serial Output (PISO), Parallel Input parallel Output (PIPO), Universal Shift Registers; Counters: Asynchronous Counter, Synchronous Counter.

MJ-2P: Digital Electronics **Credits 01**

Combinational Circuits & Sequential Circuits:

1. Implementation of different functions using Basic and Universal Logic gates, SOP, POS
2. Study and prove De-Morgan's Theorem.
3. Implementation of Basic gates using NAND and NOR gates
4. Implementation of half and Full Adder (3-bit) using basic logic gates and Universal logic gates (NAND & NOR).

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5. Implementation of half and Full Subtractor (3-bit) using basic logic gates and Universal logic gates (NAND & NOR).
6. Design 2 to 4 decoder using basic / universal logic gates.
7. Design and implement a 8:1 multiplexer.
8. Design and implement a 3×8 decoder.
9. Design and implement a 8 bit parity generator.
10. Design and implement a D flip-flop.
11. Design and implement a J. K. flip-flop.
12. Design and implement a 4-bit synchronous counter.

Suggested Readings:

1. Digital Principles and Applications: Malvino and Leach
2. Modern Digital Electronics : R.P. Jain.
3. Digital Circuits & Design – S.Salivahanan, S.Arivazhagan– Vikas Publishing House Pvt Ltd.
4. Digital logic & Computer Design- M.Mano- Prentice Hall of India.
5. Fundamental of Digital Circuits by AAnnand Kumar PHI

Supplementary Reading

1. "Digital Design and Computer Architecture" by David Harris and Sarah Harris
2. "Digital Logic Design: A Rigorous Approach" by Guy Even and Moti Medina
3. "Digital Systems: Principles and Applications" by Ronald J. Tocci, Neal S. Widmer, and Greg Moss

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MINOR (MI)

MI – 1: PC Software Lab **Credits 04 (Full Marks: 75)**

OBJECTIVE OF THE COURSE

The objective of the course "PC Software" is to provide students with a comprehensive understanding of various software applications and their practical usage on personal computers. The course aims to equip students with the necessary knowledge and skills to effectively utilize different software tools for personal and professional purposes.
The course begins with an introduction to the basics of PC software, including the concept of software, types of software, and the importance of software in modern computing. It covers essential software applications such as word processing, spreadsheets, presentation software, and database management systems. Students learn how to create, edit, format, and manipulate documents, spreadsheets, and presentations using popular software tools.

MI – 1P: PC Software Lab **[Theory: 60 Hrs]**

Course contents:

Module – I Using Office with MS-Word **(15 Hrs)**
Introduction to word processing software and it's features, Creating new document, Saving documents, Opening and printing documents. Home Tab: Setting fonts, Paragraph settings, Various styles (Normal, No spacing, Heading1, Heading2, Title, Strong), Find & replace, Format painter, Copy paste and paste special. Insert Tab: Pages, Tables, pictures, clipart, shapes, header & footer, word art, equation and symbols. Page Layout Tab: Page setup, page Background, Paragraph (indent and spacing). Mailing Tab: Create envelops and Labels, Mail merge. Review Tab: Spelling and grammar check, New comment, Protect document, View Tab: Document views, Zoom, Window (New window, Split, Switchwindow).

Module — II Working with MS-Excel **(15 Hrs)**
Introducing Excel, Use of excel sheet, Creating new sheet, Saving, Opening, and printing workbook. Home Tab: Font, Alignment, Number, Styles and cells and editing, Conditional Formatting. Insert Tab: Table, Charts (column chart, Pie chart, Bar chart, Line chart) and Texts (header & footer, word art, signature line). Page Layout Tab :Page setup options, Scale to fit(width, height, scale). Formulas Tab :Autosum (sum, average, min, max), logical(IF, and ,or ,not ,true, false), Math &trig (sin, cos, tan, ceiling, floor, fact, mod, log), watch window. Data Tab : Get external data from MS Access, Sort and filter options , Data validation, Group and ungroup. Review Tab: Protect sheet, Protect workbook, Share workbook. View Tab: Page breaks, Page layout, Freezing panes, Split and hide.

Module – III Working with MS-PowerPoint **(15 Hrs)**
Introducing power point, Use of power point presentation, Creating new slides saving, Opening and printing. Home Tab: New slide, Layout, Reset, Delete, Setting text direction, Align text, Convert to smart art, Drawing options. Insert Tab: Table, picture, clipart, photo album, smart art, shapes and chart, movie and sound, hyperlink and action, text box , word art, object. Design Tab: Page setup options, slide orientation, applying various themes, selecting background style and formatting it. Animations Tab: Custom animation for entrance, exit and emphasis, applying slide transition, setting transition speed and

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sound, animation on rehears timing. Slide show &view Tab: Start slid show options, setup options. View tab: Presentation views, colours and window option.

Module – IV Working with MS-Access (15 Hrs)

Front end and back end of application, Introduction to DBMS, Features of DBMS, Creating blank databases, Saving it in accdb format. Defining data types in ms access. Home Tab: Datasheet view, design vew, pivot chart view, pivot table view, sort and filter options. Create Tab : Creating tables, Creating reports, Query wizard. External Data Tab : importing data from access and excel sheet, exporting data to excel and ms word. Datasheet Tab: Relationships, Fields and columns options, Data type and formatting options.

Suggested Readings:

1. Chaturvedi, S. (2018). Mastering Microsoft Office: A Comprehensive Guide. BPB Publications.
2. Agarwal, A. (2019). Microsoft Word 2016: A Complete Guide. Shroff Publishers.
3. Rajesh, S. (2018). Mastering Excel: A Comprehensive Tutorial. Wiley India.
4. Gupta, R. (2019). Microsoft PowerPoint 2016: A Practical Guide. BPB Publications.
5. Prasad, A. (2017). Mastering Microsoft Access: A Complete Tutorial. BPB Publications.

SUPPLEMENTARY BOOKS

1. Jain, S. (2018). Microsoft Office 2016: A Step-by-Step Guide. TechKnowledge Publications.
2. Malik, V. (2019). Microsoft Office: A Practical Approach. Wiley India.

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MI – 2: Computer Fundamental Credits 04(Full Marks: 75)

OBJECTIVE OF THE COURSE

The objective of the course "Computer Fundamentals" is to provide students with a comprehensive understanding of the basic principles, components, and operations of computers. The course aims to equip students with the necessary knowledge and skills to effectively use and work with computers in their personal and professional lives.

One of the primary objectives is to familiarize students with the fundamental concepts and terminology related to computers. This includes understanding the history and evolution of computers, different generations of computer technology, and the basic structure and functioning of a computer system. Students will learn about the essential hardware components such as the CPU, memory, storage devices, input devices, and output devices, as well as the purpose and functionality of each component.

MI – 2T: Computer Fundamental Credits 04 [Theory: 60 Hrs]

Course contents:

MODULE- I: Introduction (10 Hrs.)

Definition of computer.Characteristics of computer.Generation of computer. Classificationof computer (Micro, Mini, Mainframe, Super), Application of computer, Basic concept aboutSoftware& Hardware, Bit, Byte, Word Nibble, Computer Languages (Low, High & assembly LevelLanguage)

MODULE-II: Basic Components of Computer (10 Hrs.)

Basic organization of digital computer (CPU, CU, ALU, Register set, Communication Path way, Input / Output Devices, Memory Module).CPU: Basic explanation about CU, ALU &Register set as well as all over CPU. Communication Pathway: Definition of Bus, Internal &External Bus,Control, Address & Data Bus. Input devices: Keyboard, Pointing device, handheld device, Opticaldevice, Audio visual device. Output device: Soft copy devices & hard copy devices. MemoryHierarchy (Definition, function, classification, Advantages & Disadvantages): Primary Memory, Secondary Memory, Cache Memory, Virtual Memory.

MODULE-III: Number System ` (15 Hrs.)

Definition, Positional & non positional number system, Binary,Decimal, octal & hexadecimal number system, Conversion between them, Binary-Decimal-Octal Hexadecimal arithmetic, Signed & Unsigned number, Complement notation (r's & (r-1)'s complement), Addition &Subtraction operation using complement notation, Floating point representation of number, Computer codes(Weighted binary codes (BCD 8421/2421,Reflective, sequential), Non-weighted binary codes(Excess-3, Gray), Error detecting & correcting codes, Alphanumeric codes(ASCII, EBCDIC, Hollerith),BCDaddition, Gray to Binary & Binary to Gray conversion.

MODULE-IV: Data communication and Computer network (15 Hrs.)

Definition of data communication, Characteristics of data communication, Component of data communication, mode of dataCommunication, Media of data communication (guided & unguided), Channel capacity.Computer Network: Definition, Network topology (Bus, Ring, Star, Mesh, Tree,

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Hybrid), Types of network (LAN, MAN, WAN, CCAN, PAN), Network devices (Hub, Repeater, Switch, Bridge, Router,Gateway), Basic idea about e-mail, Search engines, Chatting, Internetconferencing,Intranet.

MODULE-V: Operating System (10 Hrs.)

Definition of OS, Function of OS, Need of OS, Classification of OS(CUI & GUI, Single user, Multi User), Concept of Multi Programming, Multi Tasking& Multi Processing.Booting Process), Basic Concept of Assembler, Loader, Linker, Interpreter.

Suggested Readings:

1. Sinha, P. K., &Sinha, P. (2017). Computer Fundamentals: Concepts, Systems & Applications. BPB Publications.
2. Rajaraman, V. (2017). Fundamentals of Computers. PHI Learning.
3. Prakash, S. (2019). Computer Fundamentals and Programming in C. Laxmi Publications.
4. Pradhan, S. (2017). Computer Fundamentals: Architecture and Organization. Oxford University Press.
5. Bharadwaj, A. S. (2017). Computer Fundamentals and Applications. Wiley India.

SUPPLEMENTARY BOOKS

6. Deo, N. (2017). Fundamentals of Computers. DreamtechPress.Acharya, S., &Kamath, M. V. (2017). Computer Fundamentals. Prentice

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SKILL ENHANCEMENT COURSE (SEC)

SEC 1: Web Designing **Credits 03(Full Marks: 50)**

OBJECTIVE OF THE COURSE -

The objective of the course "Web Designing" is to equip students with the necessary knowledge and skills to develop professional and aesthetically pleasing websites. The course aims to provide a solid foundation in HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets) by introducing students to the core concepts, syntax, and techniques used in web development.

One of the main objectives is to enable students to understand the structure and elements of HTML and how they are used to create web pages. They will learn how to create headings, paragraphs, lists, links, images, and other essential elements, and how to organize them effectively.

SEC 1P: Web Application **Credits 03**

Course Outline:

MODULE-I: Introduction to Internet Basic
The Basic of the Internet, Concepts of Domain, IP Addressing, Resolving Domain Names, Overview of TCP/IP and its Services, WWW.

MODULE-II: Designing Pages with HTML
Introduction to HTML, Essential Tags, Deprecated Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags(DIV, MARQUEE, NOBR, DFN, HR, LISTING, Comment, IMG), Color and Background of WebPages, Lists and their Types, Attributes of Image Tag, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Foot note and e-Mailing, Creating Table, Frame, Form and Style Sheet.

MODULE-III: DHTML
Dynamic HTML, Document Object Model, Features of DHTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute, DHTML Events.

MODULE – IV: Style Sheets
Need for CSS, introduction to CSS, basic syntax and structure, Classes and Pseudo Classes, CSS tags for setting background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning etc. (Programming Assignments based on above topics)

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Practical on HTML

1. Design web pages for your college contain in ga description of the courses, departments, faculties, library etc, usehref, list tags.
2. Create your class time table using table tag.
3. Create user Student feedback form (use text box, text area, check box, radio, button, select box etc.)
4. Createawebpageusingframe.DividethepageintotwopartswithNavigationlinksonlefthandsideofpage (width=20%) and content page on right hand side of page (width=80%). On clicking the navigation Links corresponding content must be shown on the right hand side.
5. Write html code to develop a web page having two frames that divide the web page into two equal rows and then divide the row in to equal columns file ach frame with a different background color.
6. Create your resume using HTML tags also experiment with colors, text, link, size and also other tags you studied.

Practical on CSS

7. Designawebpageofyourhometownwithanattractivebackgroundcolor, text, color, an Image, font etc. (use internal CSS).
8. Use In line CSS to format your resume that you created.
9. Use External CSS to format your class time table as you created.
10. Use External, Internal, and Inline CSS to format college web page that you created

Suggested Readings:

1. Pattnaik, B. R. (2018). Web Technologies: HTML, CSS, JavaScript, XML, HTTP, and ASP. PHI Learning Pvt. Ltd.
2. Kumar, S. (2017). HTML, CSS, and JavaScript Mobile Development For Dummies. For Dummies.
3. Gupta, R. (2019). HTML, CSS, and JavaScript All in One: Covering HTML5, CSS3, and ES6. Wiley.
4. Joshi, S. (2017). HTML & CSS: A Comprehensive Guide. BPB Publications.
5. Mehta, P., & Gokhale, D. (2017). Learning Web Design: HTML, CSS, and JavaScript. O'Reilly Media.

SUPPLEMENTARY BOOKS

1. Raj, P. M., & Gokhale, A. V. (2019). HTML & CSS QuickStart Guide: The Simplified Beginner's Guide to Learning HTML and CSS. ClydeBank Media LLC.
2. Kannan, K., &Vasan, N. (2018). Web Design and Development with HTML, CSS, and JavaScript. Pearson Education India.

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SEC 2: XML Programming Credits 03

OBJECTIVE OF THE COURSE -

The objective of the course "XML Programming" is to provide students with the knowledge and skills required to work with XML (eXtensible Markup Language) and utilize it for data representation, storage, and manipulation. The course aims to enable students to understand the structure and syntax of XML, as well as the various technologies and tools associated with XML programming.

SEC 2P: XML Programming **Full Marks: 50**

Course Outline:

Module-I: Introduction - Understanding Mark-up Languages, Introduction to XML and its Goals.
Module-II: XML Basics - XML Structure and Syntax, Document classes and Rules.
Module-III: Other XML Concepts- Scripting XML, XML as Data, Linking with XML.
Module-IV: XML with Style - XSL-Style Sheet Basics, XSL basics, XSL style sheets.

XML Practical:

Exercise 1: Information Structure
In this exercise, student will practice identifying the structure of an information object. For the sample document provided below:
Label the information structures you see, including containing structures.
Draw a tree representation of the structure.

Exercise 2: Deconstructing an XML Document
In this exercise, student will practice identifying the explicit structure within an XML document. In asense, this is the reverse of what you did in Exercise 1. For the sample XML markup below, create a document-like representation (or a simple drawing) for the content contained within the XML tags:

```
<book>
<coverInfo>
<title>The XML Handbook</title>
<author>Charles F. Gold farb</author>
<author>Paul Prescod</author>
<edition>Second</edition
<description>The definitive XML resource: applications, products, and technologies. Revised and expanded— over600 new pages.
</description>
</coverInfo>
</book>
```

Exercise 3: Creating XML Markup
In this exercise, create some XML markup based on the tree representation from Exercise#1 above, and the content from the original sample document.

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Exercise 4: Well-Formedness

This exercise checks your understanding of the constraints for well-formedness. Are the following document instances well-formed? Explain any One answers.

<list><title>The first list</title><item>An item</list>

<item>An item</item><item>Another item</item>

<para>Bathing a cat is a <emph>relatively</emph>easy task as long as the cat is willing.</para>

<bibl><title>How to Bathe a Cat<author></title>Merlin Bauer<author></bibl>

Exercise 5: Well-Formedness

This exercise is a bit more challenging than the previous example. Here is a fragment of an XML document instance. Identify all the places where it fails to match the constraints for well-formedness.

<PROCEDURE><TITLE How to Bath a Cat</TITLE>

<OVERVIEW>

This procedure tells you how to bathe a cat. <WARNING></OVERVIEW>Cats don't like to take baths. You could get hurt doing this. Be sure to obtain all the required protective gear before you start. </WARNING><EQUIPEMENT><ITEM>HockeyMask<ITEM>PaddedFull-bodyKevlarArmor</ITEM><ITEM>Tubfullofwarmwater</ITEM><ITEM>Towels</ITEM><ITEM>FirstAidkit</ITEM><ITEM>CatShampoo</ITEM><EQUIPMENT><INSTRUCTIONS><STEP>

Locate the cat, who by no wishiding under the bed.</STEP><STEP>Place the cat in the tub of water.</STEP><ITEM> Using the First Aid kit, repair the damage to your head and arms.</STEP><STEP>Place the cat back in the tub and hold it down.</STEP><STEP>Wash it really ast, then make an effort to dry it with the towels.</STEP><STEP>Decide not to do this again.</STEP>

</INSTRUCTIONS>

Suggested Readings:

1. Sharma, S. (2019). XML Programming: Concepts and Techniques. Khanna Publishers.
2. Goyal, R., & Patel, S. (2018). XML Programming Made Easy. Tech-Max Publications.
3. Kapoor, P., & Singh, R. (2020). Mastering XML Programming: A Practical Guide. BPB Publications.
4. Gupta, A. K. (2017). XML Programming: Fundamentals and Applications. Wiley India.
5. Joshi, S. (2019). XML Programming: Principles and Practice. Oxford University Press.

SUPPLEMENTARY BOOKS

1. Verma, A., & Bansal, R. (2018). XML Programming in-depth: Concepts and Applications. Vikas Publishing House.
2. Singh, N., & Sharma, R. (2020). Advanced XML Programming: Techniques and Best Practices. S. Chand Publishing.

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