PART A: Introduction			
Program: Certificate	Class: B.C.A.	Year: I Year	Session: 2021-22

1.	Course Code	S1-BCAA1T
2.	Course Title	Computer Fundamentals, Organization and Architecture
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	Major – Paper I
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.
5.	Course Learning Outcomes (CLO)	After the completion of this course, a successful student will be able to : • Understand the basic structure, operation and characteristics of digital computer. • Design simple combinational digital circuits based on given parameters. • Understand the working of arithmetic and logic unit. • Know about hierarchical memory system including cache memories and virtual memory. • Know the contributions of Indians in the field of computer architecture and related technologies.
6.	Credit Value	Theory – 4 Credits Practical - 2 Credits
7.	Total Marks	Max. Marks : 25+75 Min. Passing Marks: 33

PART B: Content of the Course

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs.

Module	Topics	No. of Lectures
I	**Fundamentals of computers:** Definition, Characteristics, capabilities and limitations. Types of Computers: Analog, Digital, Micro, Mini, Mainframe & Super Computers, Work Station, Server computers. Generations of Computers. Smart Systems: definition, characteristics and applications. Definition of Embedded system, GIS, GPS, Cloud Computing. Uses of computers in e-governance and various public domains and services.	8
II	Block diagram of computer and its functional units. Concept of hardware, software and firmware. Types of software. **Input devices** - keyboard, scanner, mouse, light pen, bar code reader, OMR, OCR, MICR, track ball, joystick, touch screen camera, mic etc. **Output devices:** monitors – classification of monitors based on technology -CRT & flat panel, LCD, LED monitors, speakers, printers – dot matrix printer, ink jet printer, laser printer, 3D Printers, Wi-Fi enabled printers, plotters and their types , LCD/LED projectors.	10

(D.K. Tripathi)

	Computer memory and its types, Storage devices: Magnetic tapes, Floppy Disks, Hard Disks, Compact Disc – CD-ROM, CD-RW, VCD, DVD, DVD-RW, usb drives, Blue Ray Disc, SD/MMC Memory cards.	
III	**Fundamentals of Digital Electronics:** Data Types, Complements, Fixed-Point Representation, Floating-Point Representation, Binary and other Codes, Error Detection Codes. Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuits, Sequential Circuits, simple combinational circuit design problems. Combinational Circuits- Adder- Subtractor, Multiplexer, Demultiplexer, Decoders, Encoders Sequential Circuits - Flip - Flops, Registers, Counters.	10
IV	**Basic Computer Organization:** Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycles, Memory Reference Instruction, Input - Output & Interrupts Instruction formats, Addressing modes, Instruction codes, Machine language, Assembly language. **Register Transfer and Micro operations:** Register Transfer Language, Register Transfer, Bus & Memory Transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations.	10
V	**Processor and Control Unit:** Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, Instruction Format, Data Transfer & Manipulation, Program Control, Introductory concept of RISC, CISC, advantages and disadvantages of both. Pipelining – concept of pipelining, introduction to Pipelined data path and control – Handling Data hazards & Control hazards.	10
VI	**Memory and I/O Systems** - Peripheral Devices, I/O Interface, **Data Transfer Schemes** - Program Control, Interrupt, DMA Transfer. I/O Processor. **Memory Hierarchy**, Processor vs. Memory Speed, High-Speed Memories, Main memory & its types, Auxiliary memory, Cache Memory, Associative Memory, Interleaving, concept of Virtual Memory, Hardware support for Memory Management.	10
VII	**Indian contribution to the field** – Contributions of reputed scientists of Indian origin - like - Dr. Vinod Dham – Father of Intel Pentium Processor, Dr. Ajay Bhat – Co-Inventor of USB Technology, Dr. Vinod Khosla- co-founder of Sun Microsystems, Dr. Vijay P Bhatkar - architect of India's national initiative in supercomputing, and many others. Parallel Computing projects of India – PARAM, ANUPAM, FLOSOLVER, CHIPPS etc. Other relevant contributors and contributions.	2

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

PART A: Introduction			
Program: Certificate	Class: B.C.A.	Year: I Year	Session: 2021-22

1.	Course Code	S1-BCAA2T
2.	Course Title	**Programming Methodology & Data Structures**
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper II**
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** • Develop simple algorithms and flowcharts to solve a problem with programming using top down design principles. • Writing efficient and well-structured computer algorithms/programs. • Learn to formulate iterative solutions and array processing algorithms for problems. • Use recursive techniques, pointers and searching methods in programming. • Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles. • Have knowledge of complexity of basic operations like insert, delete, search on these data structures. • Possess ability to choose a data structure to suitably model any data used in computer applications. • Assess efficiency tradeoffs among different data structure implementations. • Implement and know the applications of algorithms for searching and sorting. • Know the contributions of Indians in the field of programming and data structures.
6.	Credit Value	Theory – 4 Credits Practical – 2 Credits
7.	Total Marks	Max. Marks : 25+75 | Min. Passing Marks: 33

PART B: Content of the Course

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs.

Module	Topics	No. of Lectures
I	**Introduction to Programming** - Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies.	8

(D.E. Tripathi)

	Basics of C++: A Brief History of C++, Application of C++, Compiling & Linking, Tokens, Keywords, Identifiers & Constants , Basic Data Types, User-Defined Data Types, Symbolic Constant, Type Compatibility, Reference Variables, Operator in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator. **Functions In C++:** The Main Function, Function Prototyping, Call by Reference Call by Address, Call by Value, Return by Reference, Inline Function, Default Arguments, Constant Arguments, Function Overloading, Function with Array.	
II	**Classes & Objects:** A Sample C++ Program with class, Defining Member Functions, 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, Array of Objects, Object as Function Arguments, Friend Functions, Virtual functions, Returning Objects, Constant member functions, Pointer to Members, Local Classes. **Constructor & Destructor:** Constructor, Parameterized Constructor, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor and Destructor.	10
III	**Inheritance:** Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructor in Derived Classes, Nesting of Classes. Operator Overloading & Type Conversion, Polymorphism, Pointers, Pointers with Arrays C++, Streams, C++ Stream Classes, Unformatted I/O Operation, Formatted I/O Operation, Managing Output with Manipulators, Exception Handling.	8
IV	**Data Structure:** Basic concepts, Linear and Non-Linear data structures **Algorithm Specification:** Introduction, Recursive algorithms, Data Abstraction, Performance analysis. **Arrays:** Representation of single, two-dimensional arrays, triangular arrays, sparse matrices-array and linked representations. **Stacks:** Operations, Array and Linked Implementations, Applications-Infix to Postfix Conversion, Infix to Prefix Conversion, Postfix Expression Evaluation, Recursion Implementation. **Queues:** Definition, Operations, Array and Linked Implementations. Circular Queue-Insertion and Deletion Operations, Dequeue (Double Ended Queue), Priority Queue- Implementation.	12
V	**Linked Lists:** Singly Linked Lists, Operations, Concatenating, circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations, Doubly Circular Linked List, Header Linked List. **Trees:** Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations,	10

	Binary Tree Traversals, Threaded Binary Trees. **Heap:** Definition, Insertion, Deletion.	
VI	**Graphs:** Graph ADT, Graph Representations, Graph Traversals, Searching. **Hashing:** Introduction, Hash tables, Hash functions, Overflow Handling. **Sorting:** Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Comparison of Sorting Methods, **Search Trees:** Binary Search Trees, AVL Trees- Definition and Examples.	10
VII	**Indian Contribution to the field:** Innovations in India, origin of Julia Programming Language, Indian Engineers who designed new programming languages, open source languages, Dr. Sartaj Sahni – computer scientist - pioneer of data structures, Other relevant contributors and contributions.	2

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

uggested Readings

extbooks:

J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015

E. Balguruswamy, "C++ ", TMH Publication ISBN 0-07-462038-X

Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7

- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

eference Books:

R. Lafore, 'Object Oriented Programming C++"

N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett Learning.

Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.

Sartaj Sahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill.

Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.

D.S. Malik, "Data Structure using C++", Second edition, Cengage Learning.

M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson.

Lipschutz, "Schaum's outline series Data structures", Tata McGraw-Hill

uggestive digital platform web links

ttps://www.youtube.com/watch?v=BCIS40yzssA

ttps://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en

ttps://www.youtube.com/watch?v=Umm1ZQ5ltZw

uggested equivalent online courses

S.No.	Online Course	Duration	Platform
1	Programming in C++ https://nptel.ac.in/courses/106/105/106105151/	8 weeks	NPTEL
2	Beginning C++ Programming - From Beginner to Beyond https://www.udemy.com/course/beginning-c-plus-plus-programming/	Self paced	Udemy

PART D: Assessment and Evaluation

ternal Assessment : Continuous	External Assessment: University Exam (UE) : 75

PART A: Introduction			
Program: Certificate	Class: B.C.A.	Year: I Year	Session: 2021-22

1.	Course Code	S1-BCAA2P
2.	Course Title	Programming Methodology & Data Structures Lab
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	Major – Paper II
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.
5.	Course Learning Outcomes(CLO)	After the completion of this course, a successful student will be able to do the following: 1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. 2. Writing efficient and well-structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming. 5. Possess ability to choose a data structure to suitably model any data used in computer applications. 6. Implement and know the applications of algorithms for searching and sorting etc.
6.	Credit Value	Practical – 2 Credits
7.	Total Marks	Max. Marks : 25+75 | Min. Passing Marks: 33

PART B: Content of the Course

No. of Lab Practicals (in hours per week): 1 hour per week

Total No. of Lab.: 30 Hrs.

Suggestive list of Practicals	No. of Labs.
Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code in C++, execute and test it. Students should be given assignments on following : 1. Write a program to swap the contents of two variables. 2. Write a program for finding the roots of a Quadratic Equation. 3. Write a program to find area of a circle, rectangle, square using switch case. 4. Write a program to print table of any number. 5. Write a program to print Fibonacci series. 6. Write a program to find factorial of a given number using recursion. 7. Write a program to convert decimal (integer) number into	30

equivalent binary number.
8. Write a program to check given string is palindrome or not.
9. Write a program to print digits of entered number in reverse order.
10. Write a program to print sum of two matrices.
11. Write a program to print multiplication of two matrices.
12. Write a program to generate even/odd series from 1 to 100.
13. Write a program whether a given number is prime or not.
14. Write a program for call by value and call by reference.
15. Write a program to create a pyramid structure
    1
    12
    123
    1234
16. Write a program to check entered number is Armstrong or not.
17. Write a program to input N numbers and find their average.
18. Write a program to find the area and volume of a rectangular box using constructor.
19. Write a program to design a class time with hours, minutes and seconds as data members. Use a data function to perform the addition of two time objects in hours, minutes and seconds.
20. Write a program to implement single inheritance.
21. Write a program to find largest element from an array.
22. Write a program to implement push and pop operations on a stack using array.
23. Write a program to perform insert and delete operations on a queue using array.
24. Write a program for Linear search.
25. Write a program for Binary search.
26. Write a program for Bubble sort.
27. Write a program for Selection sort.
28. Write a program for Quick sort.
29. Write a program for Insertion sort.
30. Write a program to implement linked list.

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

uggested Readings

J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015
E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X
Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

eference Books:

R. Lafore, 'Object Oriented Programming C++"
N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett

PART A: Introduction			
Program: Certificate	Class: B.C.A.	Year: I Year	Session: 2021-22

1.	Course Code	S1 - BCAB2T	
2.	Course Title	Operating System	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	Minor	
4.	Pre-Requisite (if any)	Open for all	
5.	Course Learning Outcomes (CLO)	• **After the completion of this course, a student shall be able to do the following:** • Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. • Specify objectives of modern operating systems and describe how operating systems have evolved over time. • Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks. • Describe the concepts of memory management techniques. • Identify the best suited process management technique for any process. • Describe various file operations, file allocation methods and disk space management. • To understand and identify potential threats to operating systems and the security features to guard against them. • Learn to operate the Linux system,	
6.	Credit Value	Theory - 4 Credits Practical – 2 Credits	
7.	Total Marks	Max. Marks : 25+75	Min. Passing Marks: 33

PART B: Content of the Course

No. of Lectures (in hours per week): 2 Hours per week

Total No. of Lectures: 60 Hrs.

Module	Topics	No. of Lectures
I	**Introduction to Operating System:** What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Batch Systems, Multiprogramming Systems, Multiprocessing Systems, Time Sharing Systems, Distributed OS, Real time systems. Operating System for Personal Computers, Workstations and Hand-held Devices. Applications of various operating system in real world. Some prevalent operating systems – Windows, UNIX/Linux, Android, MacOS, Blackberry OS, Symbian, Bada etc.	6
II	**Process Management:** Process Concepts, Process states & Process Control Block. **Process Scheduling:** Scheduling Criteria, Scheduling Algorithms (Preemptive & Non- Preemptive) – FCFS, SJF, SRTN, RR, Priority,	14

(D. K. Tripathy)

	Multiple-Processor, Real-Time, Multilevel Queue and Multilevel Feedback Queue Scheduling. **Deadlock** - Definition, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock. **Deadlock Handling Approaches:** Prevention, Avoidance, Detection and Recovery.	
III	**Memory Management:** Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms. **File Management:** Concept of File System(File Attributes, Operations, Types), Functions of File System, Types of File System, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph), Allocation Methods (Contiguous, Linked, Indexed)	14
IV	**Disk Management:** Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery. **Security:** Security Threats, Security policy mechanism, Protection, Trusted Systems, Authentication and Internal Access Authorization, Windows Security.	12
V	**LINUX:** Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux - boot block, super block, inode table, data blocks. Linux standard directories, Linux kernel, Partitioning the hard drive for Linux, installing the Linux system, system - startup and shut-down process, init and run levels. Process, Swap, Partition, fdisk, checking disk free spaces. Difference between CLI OS & GUI OS, Windows v/s Linux, Importance of Linux Kernel, Files and Directories. Concept of Open Source Software.	12
VI	**Indian contribution to the field** – the BOSS operating system, open source softwares, growth of LINUX, Aryabhatt Linux, contributions of innovators – RajenSheth, Sunder Pichai etc.	2

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications.
- A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education.
- Operating System by Peterson
- Linux by Sumitabh Das
- मध्यप्रदेशहिंदीग्रंथअकादमीसेप्रकाशितविषयसेसंबंधितपुस्तकें।

Reference Books:

- G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education.
- W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education.
- M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.
- Operating System design and Concepts by Milan Milenkovic.

PART A: Introduction

Program: Certificate	Class: B.C.A.	Year: I Year	Session: 2021-22

1.	Course Code	S1- BCABZP	
2.	Course Title	**Operating System Lab**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Minor**	
4.	Pre-Requisite (if any)	Open for All	
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a student shall be able to:** • Operate the Linux system. • Do administration • Use Vi Editor	
6.	Credit Value	**Practical – 2 Credits**	
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**

PART B: Content of the Course

No. of Lab. Practicals (in hours per week): **1Hr. per week**

Total No. of Lab.: **30 Hrs.**

	Suggestive List of Practicals	No. of Labs.
	Linux: a) **Linux Directory Commands:** pwd, mkdir, rm -rf, ls, cd,cd / , cd ~ b) **Linux File Commands:** touch, cat, cat >, cat >>, rm , cp, mv, rename c) **Linux Permission Commands:**su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp d) **Linux File Content & Filter Commands:** head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff. e) **Linux Utility Commands:** find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip. f) **Linux Networking Commands:** ip, ssh, mail, ping, host g) **Edit Crontab file:** to wall message on system on particular time automatically. h) **Vi editor:** Create file, edit, save and quit. Highligting the searched term within a file. cut, yank, undo.	30

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- Linux by Sumitabh Das
- Linux Bible
- मध्यप्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Suggestive digital platform web links

https://web.iitd.ac.in/~minati/MTL458.html
https://www.cse.iitb.ac.in/~mythili/os/
https://www.youtube.com/watch?v=aCJ3YgoolHQ

Part A : Introduction			
Program: CERTIFICATE	Class : UG	Year: I year	session :2021-2022
Subject : M. S. Office			

1.	Course Code	S1-COAP2G
2.	Course Title	M. S. Office
3.	Course Type	Elective
4.	Pre-requisite(If any)	Students should have a basic understanding of Computer peripherals like mouse, keyboard, monitor, screen, etc. and their basic operations.
5.	Course Learning Outcomes (CLO)	On the completion of this course student will be able – • To Create and manage professional documents using word. • Analyze, manage and present data using excel. • Create and manage presentation using power point. • To insert a table, picture, or drawing into the document. • To prepare the document to be sent as a circular letter.
6.	Credit Value	2
7.	Total Marks	Max. Marks: 25+75 / Min. Passing Marks: 33

Part B: Content Of the Course
M. S. Office

Total No. of Lectures =30 (1 hour/lecture per week) :1-0-0

Unit	Topics	No. of Lectures
I	MS Word: Introduction, Features & area of use. Working with MS Word: Ribbon tabs-Home, Insert, Page Layout, References, Mailings, Review and View, Using word to create a new document, open, save and print a document, edit and format text, change the page layout, background and borders, insert headers and footers, insert and edit tables, insert clip art and pictures to documents. 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. Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check , Track Changes	6
II	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 Creating a Feedback form - Features to be covered- Forms, Text Fields, Inserting objects Mail Merge : creating custom document, creating main document, creating data source , editing data source, opening a data source, sorting the data source, finding a record in data source, editing main document,	6

(D.K. Tripathi) (DR D N GOSWAMI)

	sorting merged documents, filtering merged documents, printing merged documents, merging onto letterhead, using different data sources with a single main document.	
III	**MS Excel :** Introduction to Excel interface Understanding rows and columns, Naming Cells, Working with excel workbook and sheets Formatting excel work book, New, Open, Close, Save, Save As Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline Wrap text, Merge and Centre Currency, Accounting and other formats, Modifying Columns, Rows & Cells, Perform Calculations with Functions, Creating Simple Formulas Setting up your own formula, Date and Time Functions, Financial Functions Logical Functions, Lookup and Reference, Functions **Calculations** - Features to be covered:- Cell Referencing, Formulae in excel – average, standard deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, Mathematical Functions, Statistical Functions, Text Functions. Sort and Filter Data with Excel Sort and filtering data Using number filter, Text filter, Custom filtering, Removing filters from columns, Conditional formatting.	6
IV	Create Effective Charts to Present Data Visually Inserting Column, Pie chart etc. Create an effective chart with Chart Tool, Design, Format, and Layout options, Adding chart title, Changing layouts, Chart styles, Editing chart data range Editing data series, Protecting and Sharing the work book Protecting a workbook with a password, Allow user to edit ranges, Track changes, Working with Comments. Insert Excel Objects and Charts in Word, Use Macros to Automate Tasks Creating and Recording Macros, Assigning Macros to the work sheets, Saving Macro enabled workbook. **Performance Analysis** - Features to be covered:- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting **Cricket Score Card creation** - Features to be covered:-Pivot Tables, Interactive Buttons, Importing Data, Data Protection, Data Validation	6
V	**Creating PowerPoint Presentations:** Making presentation which demonstrate use of Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts Create 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	6

(DR D N GOSWAMI)

Part A Introduction		
Program: Certificate	Year: First Year	Session: 2021-22

Course Code	V1-COS-WEBT
Course Title	Web Designing
Course Type	Vocational
Pre-requisite (if any)	Open for All
Course Learning outcomes (CLO)	After studying this Course the student will be able to – ❖ Code a handful of useful HTML & CSS examples ❖ Build semantic, HTML & CSS web page ❖ Write basic scripts ❖ Use Names, Objects, and Methods ❖ Add Interactivity to a Web Page ❖ Create Dynamic Web Pages using Java Script in HTML forms.
Expected Job Role / Career opportunities	**Job Role** - Web Designer / Front End Developer/ Creative Ad Designer **Job Description** – Web designers develop functional and appealing web pages, websites, web applications, online advertisements for individuals, businesses and government agencies to establish their online presence. They use knowledge of computer programming and graphic design to create websites that meet client needs. **Career Opportunities –** Typical employers of web designers are – ❖ Software companies ❖ IT consultancies ❖ Specialist web design companies ❖ Large corporate organisations ❖ Any organisation that uses computer systems ❖ Self-employment/freelance work is often possible for individuals with appropriate experience. ❖ Vacancies are advertised online, by career services and by recruitment agencies.
Credit Value	(4) Theory – 2 Practical – 2

(D.K. Tripathi)

Abhilasha Kumar
Chairman, Central Board of Studies, Computer Science

Part B- Content of the Course

Total No. of Lectures + Practical (in hours per week): **L-2 Hrs / P-2 Hrs**

Total No. of Lectures/ Practical: **L-30hrs/P-30hrs**

Module	Topics	No. of Hours
I	**Introduction to Internet-** World Wide Web, Internet Addressing, Browser, URL, Web server, website, homepage, Domain Name. Basic concepts. **Softwares for Web Designing** - Notepad/Notepad++, Dreamweaver, Blue Griffon, Net beans, Sea Monkey, Word press, Sublime. **Introduction to HTML:** HTML Tags and Attributes, HTML Basic Tags, Formatting Tags, HTML Color Coding, Div and Span Tags for Grouping. **Lists:** Unordered Lists, Ordered Lists, Definition list. Images: Image and Image Mapping **Hyperlink:** URL - Uniform Resource Locator, URL Encoding. Table: <table>, <th>, <tr>, <td>, <caption>, <thead>, <tbody>, <tfoot>, <colgroup>, <col>. Attributes Using Iframe as the Target **Form:** <input>, <textarea>, <button>, <select>, <label> **Headers:** Title, Base, Link, Styles, Script HTML Meta Tag, XHTML, HTML Deprecated Tags & Attributes	6
II	**CSS:** Introduction, Features and benefits of CSS, CSS Syntax, External Style Sheet using <link>, Multiple Style Sheets, Value Lengths and Percentages. **Selectors:** ID Selectors, Class Selectors, Grouping Selectors, Universal Selector, Descendant / Child Selectors, Attribute Selectors, CSS – Pseudo Classes. **Color Background Cursor:** background-image, background-repeat, background-position, CSS Cursor **Text Fonts:** color, background-color, text-decoration, text-align, vertical-align, text-indent, text-transform, white-space, letter-spacing, word-spacing, line-height, font-family, font-size, font-style, font-variant, font-weight.	5
III	**Lists Tables:** list-style-type, list-style-position, list-style-image, list-style, CSS Tables (border, width & height, text-align, vertical-align, padding, color) **Box Model:** Borders & Outline, Margin & Padding, Height and width, CSS Dimensions. **Display Positioning:** CSS Visibility, CSS Display, CSS Scrollbars, CSS Positioning (Static Positioning, Fixed Positioning, Relative Positioning, Absolute Positioning), CSS Layers with Z-Index. **Floats:** The float Property, The clear Property, The clearfix Hack.	5

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IV	**The JavaScript:** Nature of JavaScript, Script Writing Basics, Enhancing HTML Documents with JavaScript, The Building Blocks. Introduction to JavaScript, JavaScript Engines, Values, Variables and Operators, Variable Mutation, Basic Operators, Operator Precedence, JavaScript Types, Types Definition, Types in JavaScript, Objects, Type Conversion and Coercion, Static vs Dynamic Type Checking. **JavaScript Conditionals:** Introduction to Conditionals, Conditionals in JavaScript, Ternary Operators and Conditionals. Conditional Ladder & Switch statement. **JavaScript Arrays:** Introduction to Arrays, Declaring and Mutating Arrays, Array Methods and Properties, Replication with Array Methods, Multi-dimensional Arrays.	
V	**JavaScript Loops:** Introduction to Loops, Loops in JavaScript, While and Do/While Loops, For Loops, Break and Continue in Loops, Iterating Arrays, Iterating Objects. **JavaScript Functions:** Introduction to Functions, Functions in JavaScript, Nested Functions in JavaScript, Arrow Functions in JavaScript, Function as an Argument, Function as the Returned Object, **JavaScript Scope:** Scope Introduction, Scope in JavaScript, Lexical Scope, Module Scope. Method of Adding Interactivity to a Web Page, Creating Dynamic Web Pages; Concept of Java Scripting the Forms. Java Scripting the Forms, Basic Script Construction, Talking to the Form Objects, Organizing the Objects and Scripts, Field-Level Validation, Check Required Fields like Validating Zip Code, Automated Formatting, Format Phone, Format Money, Automatic Calculation, Calculate Expiration Date, Calculate Amount etc	7

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	Practicals	
	1. Design a home page which displays information about your college department using headings, HTML entitites and paragraphs. 2. Implement different type of list tags in the college department homepage. 3. Create a webpage for any clinic using marquee and HTML formatting tags. 4. Create 3 Hyperlinks in home page connecting it to 3 different pages. 5. Create 3 hyperlinks in a page, which jumps to 3 different headings on same page. 6. Insert image(s) and iframe in a webpage. 7. Design a page with image of block diagram of computer, mapping each component as area with specific co-ordinates which when clicked may give their detail. 8. Create a web page having two frames, Frame 1 containing links and another with contents of the link. When link is clicked appropriate contents should be displayed on Frame 2. 9. Design a timetable and display it in tabular format. 10. Demonstrate difference between "get" and "post" method of form tag in a form with name and password text fields. 11. Design an admission form for any course in your college with text, password fields, drop-down list, check-boxes, radio buttons, submit and reset button etc. 12. Create a website for online book store with Home, Login, Catalogue, Registration page with links to all these pages in a menu on top of every page. Embed heading, paragraph, images, video, iframe, form controls, table, list in this website. 13. Write a CSS style specification rule that would make all unordered lists (tags) have square bullets and a purple background. 14. Create a HTML form with the use of cascading style sheets. 15. Design a web page of your Home town with a attractive background color, text color, an image, font face by using Inline CSS formatting. 16. Create a catalog for an online shopping company that sells music records using style sheets. 17. Create a sample code to illustrate the Inline style sheet for your web page. 18. Create a sample code to illustrate the External style sheet for your web page 19. Design a web page by using different CSS border styles. 20. Demonstrate the use of CSS Box Model. 21. Change the color of all elements with the class "colortext" to "Blue". 22. Set different margins for all four sides of a paragraph.	15

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1. Write a JavaScript program to display the current day and time . 15
2. Write a JavaScript program to remove a character at the specified position of a given string and return the new string.
3. Write a JavaScript program to get the current date.
4. Write a JavaScript program to find the area of a triangle.
5. Write a JavaScript program to determine whether a given year is a leap year.
6. Write a JavaScript program to calculate multiplication and division of two numbers.
7. Write a JavaScript program to convert temperatures to and from Celsius, Fahrenheit.
8. Write a JavaScript program to check whether a given positive number is a multiple of 3.
9. Write a JavaScript program to change the case of a string.(i.e upper case to lower case and vice-versa).
10. Write a JavaScript program to compute the sum of elements of given array of integers..
11. Develop and demonstrate a HTML file that includes JavaScript script for taking a number n as input using prompt and display first n Fibonacci numbers in a paragraph.
12. Develop and demonstrate a HTML file that includes JavaScript script for taking full name in a text field and display first, middle, last name in 3 different labels. Middle and last name may be optional, thus message like "NA" should be displayed in corresponding labels. If input contains 2 words, then they should be considered as first and last name.
13. Develop and demonstrate a HTML file that includes JavaScript script for switching an image source for a image on click of "change" and "original" button.
14. Design HTML form for keeping student record, apply JavaScript validation in it for restriction of mandatory fields, numeric field, email-address field, specific value in a field etc.
15. Write a JavaScript code that displays text "Bigger Text" with increasing font size in the interval of 10ms in red color, when the font size reaches 50pt it displays "Smaller Text" in green color. Then the font size should decrease to 5pt and then stop.

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