

Program Structure:: BN College (Autonomous)

Bachelor of Computer Application (BCA)

Semester	Paper Name	Course Type	Credit
I	Computer Fundamental & ICT Hardware	Compulsory	4(3+1)
	Foundation Course on Mathematics-I	Compulsory	4
	Computer Programming Using C Language	Compulsory	4(3+1)
	Office Automation	SEC-I	3(2+1)
	AEC (Prepared Centrally)		
	Fundamentals of Computer Science.	MDC-I	3(2+1)
II	Digital Logic & Computer Organization	Compulsory	4
	Foundation Course on Mathematics-II	Compulsory	4
	Data Structure Through C	Compulsory	4(3+1)
	Web Designing	SEC-II	3(2+1)
	Fundamentals of Web technologies	MDC-II	3(2+1)
III	Software Engineering	Compulsory	4
	Introduction to Database Management System	Compulsory	4(3+1)
	Object Oriented Programming Through C++	Compulsory	4(3+1)
	Web Programming Technology	SEC-III	3(2+1)
IV	Operating System	Compulsory	4
	Design & Analysis of Algorithm	Compulsory	4
	Python Programming	Compulsory	4(3+1)
	Indian Knowledge System in Computing	Compulsory	4
V	Data Communication & Computer Networks	Compulsory	4
	Java Programming	Compulsory	4(3+1)
	Computer Graphics	Compulsory	4(3+1)
	Introduction to E-Commerce & Cyber Security	Compulsory	4
VI	i) Computer Oriented Numerical & Statistical Method	Elective-I	4
	ii) Artificial Intelligence		4(3+1)
	iii) Open Source Software		4(3+1)
	i) Data Mining	Elective-II	4
	ii) Graph Theory		4
	iii) System Administration Using LINUX		4(3+1)
	i) Automata Theory & Languages	Elective-III	4
	ii) Cloud Computing		4(3+1)
	iii) Android Programming		4(3+1)
	Project		4
VII	<i>To be prepared</i>		
VIII	<i>To be prepared</i>		

Name of the Department: Computer Science
Semester: 1st
Name of the Paper: Computer Fundamental & ICT Hardware
Paper Code:
Credit: 4(3+1) Hours: Theory: 45 Hrs, Practical: 30 Hrs.
Lecture: 45 Practical: 30, Tutorial:
Full Marks: 80

Course Outcome:

This course is aimed to provide an overview of computer systems and its functionality. It discusses the different components of computer systems and their organization to accomplish various tasks assigned to computers. This course also covers the concepts of number systems, logic gates and its representation in computers

On successful completion of the course, students will be able to:

1. Student will able to learn about basics of computer system, which includes both the concept of computer hardware and software.
2. Understand the representation of numbers, alphabets and other characters in a computer system.
3. Learn about the different components of computer systems, which helps computers to work.
4. Learn how to do trouble shooting of computer.
5. Understand the basic architecture and organization of computer system.
6. Get an idea of emerging technologies and their applications to solve real world problem

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
I	Introduction: Introduction to computer system, classification of computer system, uses, Major components of a computer (Block Diagram of computer, A brief introduction of CPU, Main Memory, I/O units), Keyboard, Display, Mouse, Printers etc, Secondary Storage Devices (Hard Disks, Optical Disks, Flash Memory), Memory Hierarchy, Cache Memory and Virtual Memory concepts,.	8	15
II	Hard Disk Drive: Definition, HDD, Optical Media, CDROM, Theory of operation, Drive speed, buffer, cache, CD, CD-r,CD-RW,DVD ROM. Driver. Logic Gates: Definition, Different types of gates- AND, OR, NOT, NAND, NOR, XOR, XNOR. Number System: Representation of numbers (only a brief introduction to be given) and characters in computer. Binary, Hexadecimal, Octal, BCD, ASCII, and Gray codes, Conversion of Bases.	14	25

III	System Software: Definition, Types of system software, examples of system software, system software architecture.	8	15
IV	Processor: Definition, Latest trends in processor, Motherboard, Sockets and slots, power connectors. Peripheral connectors. Bus slots, USB, pin connectors. Different Kinds of motherboards.	8	15
V	SMPS, BIOS. Network Interface Card, network cabling, I/O Box, Switches, RJ 45 connectors, Patch panel, Patch cord, racks, IP address, Protocol(TCP/IP).	7	10

Reference Books:

1. Anita Goel, Computer Fundamentals, Pearson, 2010.
2. V. Rajaraman, Neeharika Adabala, Fundamentals of Computers, PHI, EEE 6th Edition
3. Comdex: Hardware and Networking Course Kit, Dream Tech Press.
4. Ron Gilster, PC hardware: A beginners Guide, Tata McGraw Hill.

Practical Part

Part A: Computer Fundamentals

(15 Classes/30 hours)

1. Identify the peripherals of a computer of different configurations, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.
2. Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva.
3. Every student should individually install MS windows/UNIX on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.
4. Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva
5. Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.
6. Every student should individually configure IP address on computer. Lab instructor should explain the works of Linux and Windows Operating system.

Name of the Department: Computer Science
Semester: 2nd
Name of the Paper: Data Structure Through C
Paper Code:
Credit: 4(3+1) Hours: Theory: 45 Hrs, Practical: 30 Hrs.
Lecture: 45 Practical: 30, Tutorial:
Full Marks: 80

Course Outcome:

This course seeks to improve student's abilities to solve problems using fundamental data structures such as arrays, stacks, queues, lists, trees, and hash tables. The language C/C++ was selected to comprehend the implementation of these data structures.

On successful completion of the course, students will be able to:

1. To be familiar with fundamental data structures and with the manner in which these data structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles.
2. To have knowledge of the complexity of basic operations like insert, delete, search on these data structures.
3. Implement and empirically analyze linear and non-linear data structures like Arrays, Stacks, Queues, Lists, Trees, Heaps and Hash tables as abstract data structures.
4. Ability to choose a data structure to suitably model any data used in computer applications.
5. Implement and know the applications of algorithms for sorting, pattern matching etc

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
I	Introduction: Definition of data structure, classification of data structure: primitive and non-primitive, linear and nonlinear, data structure operations.	5	10
II	Linear Data Structure: Array and Linked List: Arrays: Array as a data structure (characteristics, advantages, disadvantages). Representation of arrays – single and multidimensional, Insertion and deletion in arrays. Linked Lists: Singly, Doubly and Circular Lists (Array and Linked representation), Operations on lists – creation, insertion, deletion, traversal, merging and splitting. Stacks and Queues: Definition of Stack and Queue, Representation of stacks and queues using arrays and linked lists, Prefix, Infix and Postfix expressions, Utility and conversion of these expressions from one to another; Queue	12	25

	operation – enqueue, dequeue. Circular Queue, Priority Queue.		
III	Non-Linear Data Structure: Trees — Definition of Trees – General tree and Binary tree, Definition, quantitative properties, memory representation, Trees traversal algorithms (recursive and non-recursive), Binary tree traversal methods – pre-order, in-order, post-order threaded trees, BFS, DFS.	10	20
IV	Searching and Sorting: Linear Search, Binary Search, Comparison of Linear and Binary Search, Selection Sort, Insertion Sort, Bubble Sort, Merge Sort, Quick Sort, Comparison of Sorting Techniques.	10	15
V	Analysis of Algorithm and Complexity: Complexity measures of an algorithm – Time and space complexity. Average case and worst case analysis. Asymptotic notation as a measure of algorithm complexity, O and θ notations. Analysis of sorting algorithms and Searching algorithms in terms of time and space complexity in best, average and worst case.	8	10

Reference Books:

1. Adam Drozdek, "Data Structures and Algorithms in C++", Third Edition, Cengage Learning, 2012.
2. Sartaj Sahni, Data Structures, "Algorithms and applications in C++", Second Edition, Universities Press, 2011.
3. Weiss, Mark Allen. "Data Structures and Algorithm Analysis in C". 3rd ed., Pearson, 2012.
4. Aaron M. Tenenbaum, Moshe J. Augenstein, Yedidyah Langsam, "Data Structures Using C and C++", Second edition, PHI, 2009.
5. Goodrich, Michael T., and Roberto Tamassia. "Data Structures and Algorithms in C". 2nd ed., Wiley, 2011.
6. Horowitz and Sahani, Narosa, Data Structure

Practical Part

Practical: 15 classes(30 hrs.)

Practical / Lab work to be performed (Write programs in C language)

1. Implement binary search and linear search algorithms on arrays.
2. Implement following sorting algorithms: i) Bubble sorting ii) Insertion sort iii) Heap sort iv) Quick sort v) Merge sort.
3. Write a program to create a singly linked list and insert an element at the beginning, end, and at a given position of the linked list.
4. Write a program to create a singly linked list and delete an element from any position of the linked list.
5. Write a program to create a singly linked list. Write functions for i. counting the number of elements in a list ii. to search for a given element in a list. If the item has been found then it should return the position at which the item was found; otherwise it should return -1 to indicate not found.
6. Write a function to concatenate two linked lists.
7. Write a function to merge two sorted linked lists.
8. Write a program to create a doubly linked list and insert an element at any position.
9. Write a program to create a doubly linked list and delete an element from a given position.
10. Write a program to create a circular linked list and insert / delete an element at any position.
11. Write a program to implement a stack using i) array structure ii) linked list structure.
12. Write a program to implement two stacks using a single array.
13. Write a program to evaluate a postfix expression using stack.
14. Write a program to convert an infix expression into a postfix expression.
15. Write a program to implement a queue using array.
16. Write a program to implement a queue using linked list.
17. Write a program to implement a circular queue using array.
18. Write a program to implement a circular queue using linked list.
19. Write a program to create a binary search tree using link representation and display the elements in preorder, in order and post order using recursive function.
20. Write a program to create a binary search tree using link representation and i) search ii) delete an item from the binary search tree.

Name of the Department: Computer Science
Semester: BCA 1st Semester
Name of the Paper: Foundation Course on Mathematics-I
Paper Code:
Credit: (4) Hours: Theory: 60 hrs Practical: 0 hrs
Lecture: Practical: Tutorial:
Full Marks:

Course Outcome:

CO1: Learn the concepts of set, relation, and function from Computer Science point of view.

CO2: Know how to view a table/database as an n-ary relation.

COS: Understand Mathematical Logic from algorithmic point of view.

CO4:

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
I	<p style="text-align: center;"><u>Set Theory:</u></p> <p>Introduction, Basic Concepts of set, Types of sets, Sub Sets. Operation on Sets, Venn Diagram, Multiset, Countable and Uncountable Sets, Principle of inclusion and exclusion and their applications on simple problems. Ordered Pairs and Cartesian Product,</p> <p style="text-align: center;"><u>Relation</u></p> <p>Introduction, Relations on Sets, Types of Relations, Equivalence relations, Equivalence classes and partitions, n-ary relations and representation of n-ray relations as tables, Partial order relations and lattices.</p> <p style="text-align: center;"><u>Function</u></p> <p>Introduction, Function, Classification of Functions, Types of function, Composition of functions.</p>	25	40
II	<p style="text-align: center;"><u>Mathematical Logic:</u></p> <p>Introduction, Negation of Compound Statements, Normal Forms, Propositions Statements, Compound Proposition, Propositions and Truth Tables. Logical Equivalence, Algebra of Propositions, Conditional Proposition Converse, Contrapositive and Inverse, Biconditional Statement, Logic in Proof, Methods of Proof.</p>	25	40
III	<p style="text-align: center;"><u>Automata Theory:</u></p> <p>Concept of languages and grammar, Regular expressions, Connection between regular expressions and regular languages, Regular grammars, Right and Left-Linear Grammars</p>	10	20

Text Books:

1. Discrete Mathematics Structures with Applications to Computer Science, Swapan Kumar Sarkar, S. Chand
2. Matrice: A.R. Vasishtha, Krishna PrakashanMandir, Meerut.

Reference Books:

- (a) Discrete Mathematics Structures with Applications to Computer Science, J. P. Tremblay and R. Manohar, Me-Graw Hill.
- (b) Discrete Mathematics, N. Ch.SN Iyengar, K.A. Venkatesh, V. M. Chandrasekaran, P.S. Arunachalam, Vikash Publishing House Pvt Ltd.
- (c) Elements of Discrete Mathematics, C. L. Liu, Mc-Graw Hill International Ed.

Name of the Department: Computer Science
Semester: BCA 2nd Semester
Name of the Paper: Foundation Course on Mathematics-II
Paper Code:
Credit: (4) Hours: Theory: 60 hrs Practical: 0 hrs
Lecture: Practical: Tutorial:
Full Marks:

Course Outcome: After successful completion of this course, students will be able to:

CO1: Learn what a matrix is and relate it with arrays used in programming.

CO2: Understand determinants and how determinants are used in solving simultaneous equations.

CO3: Understand graphs and its different representations in Computers. How to model real life problems using graphs. Learn a few basic graph traversal algorithms.

CO4: Understand the basic idea of counting and use it in counting under various constraints.

CO5: Get familiar with statistical and probabilistic measures that are used in computation related software/packages.

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
I	<p style="text-align: center;"><u>Matrices:</u></p> <p>Introduction, Notation and Definition. Types of Matrices. Matrix Arithmetic. Trace and transpose of a Matrix, Adjoint of square.</p> <p style="text-align: center;"><u>Determinant</u></p> <p>Determinant of a Matrix, Properties of determinates. Minor and cofactor, Elementary, Transformations. Solution of Linear Equations by Matrix Method, Cramer's Rule. Rank of a Matrix. Eigenvalues and Eigenvectors.</p>	20	30
II	<p style="text-align: center;"><u>Graph theory:</u></p> <p>Introduction, Basic Terminology. Simple Graph. Multigraph and Pseudo graph, Degree of a Vertex, Types of Graphs. Subgraphs and Isomorphic Graphs, Operations of Graphs, Paths. Cycles and Connectivity, Eulerian and Hamiltonian Graph, Shortest Path Problems, Representation of Graphs, Planar Graphs.</p>	20	30
III	<p style="text-align: center;"><u>Combinatorics:</u></p> <p>Introduction, The Fundamental Principles. Factorial Notation, Permutation, Combination. Number of onto Function, Derangements. Principle of Inclusion and Exclusion, Pigeonhole Principle, Binominal theorem. Combinatorial Identities.</p>	10	20
IV	<p style="text-align: center;"><u>Fundamentals of Statistics</u></p> <p>Types of Data, Cumulative frequency, Graphical representation of Frequency distribution: Histogram, Frequency Polygon, Frequency, Curve and Cumulative Frequency curves (Ogive curves). Diagrammatic representation.</p>	10	20

	<u>Discrete and Probability</u> Measures of central tendency- Mean, Median and Mode. Measures of variation Range, Interquartile range, Standard Deviation and Variance. Sample space, events, random variables, basic probability.		
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Text Books:

1. Discrete Mathematics Structures with Applications to Computer Science, Swapan Kumar Sarkar. S. Chand.

Reference Books:

- (a) Discrete Mathematics Structures with Applications to Computer Science, J. P Tremblay and R. Manohar. Mo-Graw Hill.
- (b) Discrete Mathematics, N. Ch.SN Jyengar, K.A. Venkatesh. V. M. Chandrasekaran. P. S Arunachalam, Vikash Publishing House Pvt Ltd.
- (c) Elements of Discrete Mathematics, C. L. Liu. McGraw Hi International Ed

Name of the Department: Computer Science
Semester:1st
Name of the Paper: COMPUTER PROGRAMMING USING C LANGUAGE
Paper Code:
Credit: 4(3+1) Hours: Theory: 45 Hrs, Practical: 30 Hrs.
Lecture: 45 Practical: 30, Tutorial:
Full Marks: 80

Course Outcome:

This course is aimed to provide a basic know-how of programming using C. The course discusses the different fundamental concepts of programming using programming examples. On successful completion of the course, students will be able to:

1. Understand what is meant by programming and how it is useful while solving problems.
2. Learn about the basic of C.
3. Write code, compile and execute programs.
4. Understand the concepts of array, function, pointer etc.

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
I	Concept of algorithm, Flow chart, Pseudocode, High Level Language and Low Level Language, Compiler and Interpreter	4	5
II	Sample C program, C program structure, executing a C program. Basic Data Types, Variables, Constants, keywords and identifiers, variables declaration, Assigning values to variables. Operators and Expression: Categories of operator- Arithmetic, Relational, logical, assignment, increment, decrement, conditional, bitwise and special operators; arithmetic expressions, precedence and associativity of operators, type conversions,	10	15
III	<i>if.....else</i> statement, nested <i>if.... else</i> statement, <i>switch....case</i> statement, <i>goto</i> statement, <i>for</i> loop, <i>while</i> loop, <i>do-while</i> loop, <i>break and continue</i> statement	5	15
IV	Declaration and accessing elements of arrays, initializing of arrays, two-dimensional arrays, multidimensional arrays, Introduction to strings, Various string functions, Introduction to Pointers, Declaration and initialization of pointers, accessing a variable through address and	10	15

	through pointer		
V	Introduction to functions, Declaration, definition and return type of functions, Function arguments, Function calling- call by value and call by reference, Recursion, Passing an array as argument to a function. Structures: Declaration and initialization, Basic concept of Union	10	15
VI	Basic concept of file handling, Opening and closing of files using fopen(), fclose(). Binary vs text files. Reading and writing files, Random access to files	6	15

Reference Books:

1. Byron Gottfried, Schaum, *Outline Programming with C*, Second Edition, Tata McGraw-Hill
2. Yashavant Kanetkar, *Let Us C*, Eighth Edition, BPB Publications.
3. E. Balaguruswami, "Programming in ANSI C", TATA McGraw Hill

Practical / Lab work

(Student has to perform **any twenty** of the following experiments)

1. Write a program to take input of two numbers and print their sum, product, difference.
2. Write a program to convert a given temperature value from Fahrenheit scale to centigrade scale and vice versa.
3. Write a program to display ASCII value of a character and vice versa
4. Write a program to check whether a number is prime or not.
5. Write a program to find out the biggest of three numbers.
6. Write a program to generate the series of even numbers
7. Write a program to calculate the sum of n terms of Fibonacci series, where n is entered by the user
8. Write a program to display the sum of the digits of an "n digit" number.
9. Write a program to find out minimum, maximum, sum and average of n numbers
10. Program to find mean and standard deviation (SD) for a set of n numbers without using array.
11. Write a program to find out the roots of a quadratic equation. Use proper testing to find checks for real and complex roots.
12. Write a program to print the digits of a number in words.

13. Write a function to return the HCF of two positive integers. Write a main function to read two positive integers and print their HCF and LCM by using the above function.
14. Write a program to convert a decimal number into binary number using function
15. Write functions to compute the factorial of a number using both recursive and non-recursive procedure.
16. Write a program to create an array with inputs from the user and print the same.
17. Write a program to Multiply two matrices using array.
18. Write a function to accept two arrays as argument and returns their sum as an array.
19. Write a program to ask the name of the user and print the same .
20. Write a program to count the number of vowels in a string.
21. Write a program to concatenate two strings using function (without using library function).
22. Write a program to convert a string from upper case to lower case and vice versa.
23. Write a program to swap two numbers using pointers.
24. Write a program to sort n number of strings in ascending order using pointer.
25. Write a program using pointers to copy a string to another string variable (without using library function).
26. Declare a structure of a student with details like roll number, student name and total marks. Using this, declare an array with 50 elements. Write a program to read details of n students and print the list of students who have scored 75 marks and above.
27. Write a program to read a text file and count the number of vowels in the text file.
28. Write a program to copy a text file to another file.
29. Write a program that opens a file in append mode and allows the user to add text to the end of file.
30. Write a program to read a file containing integer numbers and copy the odd and even numbers in separate files.

Name of the Department: Computer Science
Semester: 2nd
Name of the Paper: Digital Logic and Computer Organisation
Paper Code:
Credit: 4 Hours: 60
Lecture: 60 Practical: 0 Tutorial: 0
Full Marks: 100

Course Outcome:

The essential ideas of digital computer organization, design, and architecture are covered in this course. Its goal is to give students a fundamental grasp of the components that make up a computer system, as well as how these components are put together to create a digital computer system. On successful completion of the course, students will be able to:

1. To make students understand the basic structure, operation and characteristics of digital computers.
2. Design Combinational Circuits using basic building blocks. Simplify these circuits using Boolean algebra and Karnaugh maps. Differentiate between combinational circuits and sequential circuits.
3. Represent data in binary form, convert numeric data between different number systems and perform arithmetic operations in binary.
4. To familiarize the students with hierarchical memory systems including cache memories and virtual memory.

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
I	Boolean algebra, dual and complement of Boolean expression, Canonical form and Standard form, Sum of product and product of sum form, Conversion between Canonical and standard form, Karnaugh map method, Don't care condition, and Quine Mc Cluskey method, Different types of gates, Implementation of logic expression with logic gates.	20	20
II	Combinational Circuit: Adders: Half and Full, Subtractors: Half and Full Subtractor, Magnitude comparator, Decoder, Encoder, Multiplexer, Demultiplexer,	12	20
III	Sequential Circuit: RS flip-flop or latch, Clocked RS flip-flop, D flip-flop, JK flip-flop, T flip-flop, Master Slave JK Flip- Flop	12	20
IV	Counters: Types of counters: Synchronous and Asynchronous Counters, Up Down Counters, Frequency Division Counter, Ripple Counter, Time Division Counter.	8	20

	Registers: Shift registers (serial in serial out, serial in parallel out, parallel in serial out, parallel in parallel out).		
V	I/O Organization: Different I/O Techniques - Program controlled I/O, Interrupt driven I/O, Direct Memory Access (DMA), Priority and Daisy Chaining Techniques	8	20
VI	Memory and I/O Access: Memory Read Write Operation, Concept of Handshaking, I/O Processor		

Reference Books:

1. M. M. Mano, *Digital Logic and Computer Design*, PHI, 1994
2. C. Bartee, *Computer Architecture and Logic Design*, McGraw Hill, 1991
3. Andrew S Tanenbaum (2006), *Structured Computer Organisation*, 5th Edition, Pearson Education Inc.

Name of the Department : Computer Science
Semester: BCA 1st Semester
Name of the Paper: Office Automation
Paper Code:
Credit: (2+1 = 3) Hours: Theory: 30 hrs Practical :30 hrs
Lecture: 45 Practical: 25. Tutorial: 0
Full Marks:

Course Outcome:

After completing the course, students will gain knowledge related to automation tools such as word processing tools, spreadsheets , presentations etc.

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
1	Word Processing : Introduction, features, exploring the ribbon (home tab, insert tab, page layout tab etc.), creating and saving a document, opening and editing an existing document, Formatting Features (Paragraph Formats, Aligning text & paragraph, Border and Shading, Header & Footers, Bullet & Numbering), inserting a picture, performing spelling and grammar check, working with tables, printing a document, mail merge.	10	15
2	Introduction to Spreadsheet, creating, saving and editing a workbook, Inserting, deleting sheets, working with Formula & Cellreferencing, Functions, working with ranges - creating, editing and selecting ranges, Format Feature: AutoFormat Feature, Changing alignment etc. Printing a worksheet, Creating Charts & Graphs. linking and embedding	10	15
3	Creating and saving a presentation, working with slides, adding formatting features, inserting clips, images, videos etc., preview presentation, slide show	10	15

Reference Books:

1. Anita Goel, Computer Fundamentals, Pearson, 2012
2. Vikas Gupta, Comdex Hardware and Networking Course Kit, DreamTech Press

PRACTICALS

(30 hrs)

1. Create a document and
 - a. Put Bullets and Numbers
 - b. Apply various Font parameters.
 - c. Apply Left, Right, and Centre alignments.
 - d. Apply hyperlinks
 - e. Insert pictures
 - f. Insert ClipArt
 - g. Show the use of WordArt
 - h. Add Borders and Shading
 - i. Show the use of Find and Replace.
 - j. Apply header/footers
2. Create any document and show the use of File ☐ versions.
3. Create any document and show the difference between paste and paste special.
4. Create a document to show the use of Washout/Watermark.
5. Implement the concept of mail merge.
6. Implement the concept of macros.
7. Implement the concept of importing a file/document.
8. Implement the concept of merging the documents.
9. Create a student table and do the following:
 - a. Insert new row and fill data
 - b. Delete any existing row
 - c. Resize rows and columns
 - d. Apply border and shading
10. Consider the following employee worksheet:-

Name	Grade (1/2/3)	Basic Salary	HRA	PF	Gross	Net	VA (Vehicle Allowance)

HRA is calculated as follows:

Grade	HRA %(of Basic)
1	40%
2	35%
3	30%

Gross = Basic + HRA + VA

Net = Gross –PF

PF is 8% for all Grades

VA is 15000, 10000 and 7000 for Grades 1, 2 and 3.

- i) Find max, min and average salary of employees in respective Grade
- ii) Count no. of people where VA>HRA
- iii) Find out most frequently occurring grade.
- iv) Extract records where employee name starts with “A” has HRA>10000
- v) Print Grade wise report of all employees with subtotals of net salary and also grand totals. Use subtotal command.
- vi) Extract records where Grade is 1 or 2 and salary is between 10000 and 20000 both inclusive.

11. The following table gives an year wise sale figure of five salesmen in Rs.

Salesman	2000	2001	2002	2003
S1	10000	12000	20000	50000
S2	15000	18000	50000	60000
S3	20000	22000	70000	70000
S4	30000	30000	100000	80000
S5	40000	45000	125000	90000

- i) Calculate total sale year wise.

- ii) Calculate the net sales made by each salesman
 - iii) Calculate the commission for each salesman under the condition :-
 - a) If total sales is greater than Rs. 4, 00,000/-, then commission is 5% of total sale made by the salesman.
 - b) Otherwise, 2% of total sale.
 - iv) Calculate the maximum sale made by each salesman.
 - v) Calculate the maximum sale made in each year.
 - vi) Draw a bar graph representing the sale made by each salesman.
 - vii) Draw a pie graph representing the sale made by salesmen in year 2001.
12. Make a presentation of College Education System

Name of the Department: Computer Science
Semester: BCA 2nd Semester
Name of the Paper: Web Designing
Paper Code:
Credit: (2+1 = 3) Hours: Theory:30 hrs Practical :30 hrs
Lecture: 45 Practical: 25 Tutorial: 0
Full Marks:

Course Outcome:

After learning the course, students will be able to design interactive web pages with HTML and CSS.

Main Syllabus:

Unit No.	Syllabus	Class Hour	Allotted Marks
1	Introduction, Elements, attributes, headings, paragraphs, line break, pre tag	5	5
2	Formatting text, Lists, ordered, unordered, nested lists. Relative links, Absolute links, Link attributes, inserting images	5	10
3	Tables : Inserting a table, Table attributes, table headers	5	10
4	Form Elements, Form Attributes, Input Types, Input Form Attributes	5	10
5	CSS, Inline, Internal and external CSS, Colors, Font, Sizes and Border, Padding and Margin, Linking to External CSS.	10	10

Reference Books:

1. Prem Kumar, Web Design with HTML & CSS, Notion Press

PRACTICALS

(30hrs)

1. Create a HTML document consisting of HTML heading, paragraphs and images.
2. Create a HTML document and insert comments in the HTML source code and insert horizontal lines.
3. Construct HTML document to set the font of a text, size of the font, style of the font.
4. Create a HTML document to show how to create hyperlinks.
5. Create a HTML document to use an image as a link.
6. Create a HTML document with all table elements (Table, Caption, Table Row, Table Data element, Table Heading Element, THEAD, TFOOT, TBODY)
7. Create HTML document to make an unordered list, an ordered list, different types of unordered lists, different types of ordered lists, Nested list, Definition list.
8. Create HTML form with the all FORM elements (text fields, password field, Checkboxes, Radio buttons, Select elements, Drop-down list with a pre-selected value, Textarea (a multiline text input field) and buttons.
9. Construct a HTML document with CSS to Set the background colour of a page.
10. Construct a HTML document with CSS to set an image as the background of a page.
11. Construct HTML document with CSS to Set the text color of different elements and align the text.

Name of the Department: Computer Science

Semester: 1st

Name of the paper: **MDC 1(Fundamentals of Computer Science)**

Paper Code:.....

Credit: 3 Theory: 2 Practical: 1

Hours: Theory: 45 hrs Practical: 30 hrs.

Course Learning Outcomes (CLO):

After completing this course, the learner will be able to: 1. understand the basic concepts of computer and operating systems 2. Understand storage capacity of a computer 3. do the basic editing and formatting in a document

Unit No.	Syllabus	Class Hour	Allotted Marks
I	Computer Fundamentals: Evolution of Computers through generations, Characteristics of Computers, Classification of Computers, Functional Components of a Computer System, Applications of computers in Various Fields. Types of Software: System software, Application software, Utility Software.	15	15
II	Memory Systems: Concept of bit, byte, word, nibble, storage locations and addresses, concept of memory hierarchy. Primary Memory - RAM, ROM, PROM, EPROM. Secondary Memory - Types of storage devices, Magnetic Tape, Hard Disk, Optical Disk.	15	15
III	Introduction to Operating System: Definition, Functions, Features of Operating System, Icon, Folder, File, Start Button, Task Bar, Status Buttons, Folders, Shortcuts, Recycle Bin, Desktop, My Computer, My Documents, Windows Explorer, Control Panel, Internet and its uses.	15	20

Reference Books:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB.
2. Dromey, R.G., How to Solve it By Computer, PHI.
3. Norton, Peter, Introduction to Computer, McGraw-Hill

Name of the Department: Computer Science

Semester: 2nd semester.

Name of the paper: **MDC 2 (FUNDAMENTALS OF WEB TECHNOLOGIES)**

Paper Code:.....

Credit: 3 Theory: 2 Practical: 1

Hours: Theory: 45 hrs Practical: 30 hrs.

Course Learning Outcomes(CLO):

The aim of the course is to provide knowledge of web as a tool in presenting information. Each and every product in e-world now needs a website, this paper will make student knowing about the concept of web design in general.

Unit No.	Syllabus	Class Hour	Allotted Marks
I	Introduction to Internet and World Wide Web (WWW), Web Pages, Web Servers, Web Browsers, Search Engines and Search Tools.	10	10
II	Web Development: HTML Document Features, Fundamentals HTML Elements, Creating Links; Headers; Text styles; Text Structuring; Text colour and Background; Formatting text; Page layouts, Images; Ordered and Unordered lists;	20	20
III	Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes.	20	20

Reference Books:

1. Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
- 2 Ramesh Bangia, Multimedia and Web Technology, Firewall Media.

Prof. Anjana Kakati Mahanta
Department of Computer Sc.
Gauhati University

Mr. Ajit Das
HOD, Department of Computer Sc.
Bodoland University

Mr. Pranchis Narzaree
HOD, Department of Computer Sc.
Kokrajhar Govt. College

Dr. Sahjahan Ali
HOD, Department of Computer Sc.
B.N. College(Autonomous), Dhubri

Begum Mehtaz Shirin
Asstt.Prof. Department of Computer Sc.
B.N. College(Autonomous), Dhubri

Shantanu Adhikary
Asstt. Prof. Department of Computer Sc.
B.N. College(Autonomous), Dhubri

Jiyarul Islam
Asstt. Prof. Department of Computer Sc.
B.N. College(Autonomous), Dhubri

Mahmudul Islam
Block MIS Manager
Jamadarhat Dev. Block