GOVT. COLLEGE BARWALA(PANCHKULA)

Session 2023-2024 (ODD SEMESTER)

NAME OF PROFESSOR: Dr. Anju Dhull

DESIGNATION: Assistant Professor in Computer Science

SUBJECT/PAPER: LOC-I

CLASS: BCA-Ist

SR. NO.	MONTH	TOPICS TO BE COVERED	REMARKS IF ANY
1.	August	Number Systems: Binary, Octal, Hexadecimal etc. Conversions from one number system to another, BCD Number System. BCD Codes: Natural Binary Code, Weighted Code, SelfComplimenting Code, Cyclic Code. Error Detecting and Correcting Codes. Character representations: ASCII, EBCDIC and Unicode. Number Representations: Integer numbers - sign-magnitude, 1's & 2's complement representation. Real Numbers normalized floating point representations.	
2.	September	Binary Arithmetic: Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division using 1's and 2's Compliment representations, Addition and subtraction with BCD representations. Boolean Algebra: Boolean Algebra Postulates, basic Boolean Theorems, Boolean Expressions, Boolean Functions, Truth Tables, Canonical Representation of Boolean Expressions: SOP and POS. Simplification of Boolean Expressions using Boolean Postulates & Theorems, Kaurnaugh-Maps (upto four variables), Handling Don't Care conditions.	UNIT TEST

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3.	October	Logic Gates: Basic Logic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. Their symbols, truth tables and Boolean expressions. Combinational Circuits: Design Procedures, Half Adder, Full Adder, Half Subtractor, Full Subtracor, Multiplexers, Demultiplexers, Decoder, Encoder, Comparators, Code Converters.	
4.	November	Sequential Circuits: Basic Flip- Flops and their working. Synchronous and Asynchronous Flip –Flops, Triggering of FlipFlops, Clocked RS, D Type, JK, T type and Master-Slave Flip-Flops. State Table, State Diagram and State Equations.	UNIT TEST
5.	December	Flip-flops characteristics & Excitation Tables. Sequential Circuits: Designing registers –Serial-In Serial-Out (SISO), Serial-In Parallel-Out (SIPO), Parallel-In Serial-Out (PISO) Parallel-In Parallel-Out (PIPO) and shift registers.	

TWO ASSIGNMENTS WILL BE TAKEN AS PER SCHEDULE

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SUBJECT/PAPER : Data Structures-I

CLASS :BCA-3rd sem

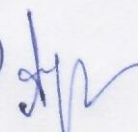| SR. NO.	MONTH	TOPICS TO BE COVERED	REMARKS IF ANY
1.	August	Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures, Algorithms complexity and time-space tradeoff, Big-O notation. Strings: Introduction, String strings, String operations, Pattern matching algorithms.	
2.	September	Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparce matrics. Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Garbage collection, Applications of linked lists. Algorithms for Insertion, deletion in array, Single linked list	
3.	October	Stack: Introduction, Array and linked representation of stacks, Operations on stacks,	UNIT TEST
4.	November	Applications of stacks: Polish notation, Recursion. Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of	

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5.	December	queues.	
		Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks and using recursion. Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs.	

TWO ASSIGNMENTS WILL BE TAKEN AS PER SCHEDULE.

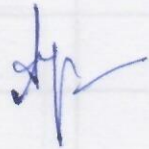SUBJECT/PAPER : Computer Architecher

CLASS :BCA-3rd sem

SR. NO.	MONTH	TOPICS TO BE COVERED	REMARKS IF ANY
1.	August	Basic Computer Organisation and Design: Instruction Codes, Computer registers, Computer instructions, Timing and Control, Instruction Cycle. Memory reference instructions, Input-Output and Interrupt. Design of Basic computer, Design logic	
2.	September	Register Transfer and Microoperations: Register Transfer Language (RTL), register transfer, Bus and Memory Transfers, Arithmetic Internal: memory. address sequencing. microprogram sequencer, Design of Control Unit	
3.	October	Central Processing Unit: Registers Organization , Instruction formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Program Interrupt, RISC. CISC.	UNIT TEST
4.	November	Memory Organization: Memory hierarchy. Auxiliary Memory, Associative Memory. interieaved memory. Cache memory. Virtual Peripheral device	

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| 5. | December | Input-Output interface, Asynchronous data transfer, Modes of Transfer. Priority Interrupt. Direct Memory Access {DMA},Input-Output Processor_(IOP). | |

TWO ASSIGNMENTS WILL BE TAKEN AS PER SCHEDULE.

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Class: BCA-VTH SEM
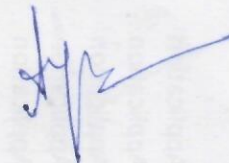Subject/Paper: Operating System-I

Sr. No.	Months	Topics to be covered	Remarks if any,
1	August	Definition, Characteristics, Components, Functions, Classification of Operating System System Calls and System Programs	
2	September	Process Management: Process concept, Process states and Process Control Block; Process Scheduling: Scheduling Queues, Schedulers, Context Switch; Operation on Processes: Process Creation, Process Termination; Cooperating Processes.	UNIT TEST
3	October	Introduction to Threads, Inter-process Communication; CPU Scheduling, Deadlocks, Deadlock Characterization.	
4	November	Methods of Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Swapping, Contiguous Allocation.	UNIT TEST
5.	December	Paging,Segmentation, Virtual Memory: Introduction, Demand Paging, Page Replacement, Page Replacement Algorithms: FIFO, Optimal, LRU,THRASHING,FILE MANAGEMENT	

TWO ASSIGNMENTS WILL BE TAKEN AS PER SCHEDULE.

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Class: BCA-3rd sem
Subject/Paper: DS Practical

Sr. No.	Months	Topics to be covered	Remarks if any,
1	AUGUST	Arrays Programs	
2	SEPTEMBER	Arrays Programs	
3	OCTOBER	Stacks and Queues Programs	
4	NOVEMBER	Linked List programs	
5	DECEMBER	Tree Programs	

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SUBJECT/PAPER: LOC-I(Practical)

CLASS: BCA-Ist

SR. NO.	MONTH	TOPICS TO BE COVERED	REMARKS IF ANY
1.	August	Problems based on Number System and their conversion. Programs based on Number System conversion.	
2.	September	Problems based on Binary Arithmetic. Programs based on Binary Arithmetic. Problems based on Boolean Expression and their simplification	
3.	October	Understanding working of logic Gates.	
4.	November	Designing and understanding various combinational circuits.	
5.	December	Designing and understanding various sequential circuits	

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