**Lesson Plan**

**Subject- BCA-352: Operating System-I**

**Class- BCA 5th Sem**

**Teacher- Ms. Ritu Baniwal**

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| **Week** | **Topics to be covered** |
| Week 1 | Unit- 1  Operating System: Definition, Characteristics, Components, Functions, Examples |
| Week 2 | Unit- 1  Types of Operating System: Single User/Multi User, Classification of Operating System: Batch, Multiprogrammed, Timesharing, Multiprocessing, Parallel, Distributed, Real Time |
| Week 3 | Unit- 1  System Calls and System Programs: Process Control, File Manipulation, Device Manipulation, Information Maintenance, Communications  Test |
| Week 4 | Unit- 2  Process Management: Process concept, Process states and Process Control Block; Process Scheduling: Scheduling Queues, Schedulers, Context Switch |
| Week 5 | Unit- 2  Operation on Processes: Process Creation, Process Termination; Cooperating Processes, Introduction to Threads, Inter-process Communication |
| Week 6 | Unit- 2  CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms: FCFS, SJF, Priority, Round-Robin, Multilevel Queue, Multilevel Feedback Queue Scheduling, Practice of Scheduling Examples  Practice Tests |
| Week 7 | Unit- 3  Memory Management: Introduction, Swapping, Contiguous Allocation: Single-Partition/Multiple Partition Allocation, External/Internal Fragmentation; Paging: Basic Method, Hardware, Implementation of Page table |
| Week 8 | Unit- 3  Segmentation: Basic Method, Hardware, Implementation of Segment Table, Advantages/Disadvantages of Paging/Segmentation |
| Week 9 | Unit- 3  Deadlocks: System Model, Deadlock Characterization, Methods of Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance |
| Week 10 | Deadlocks continue: Deadlock Detection and Recovery  Test |
| Week 11 | Unit- 4  Virtual Memory: Introduction, Demand Paging, Page Replacement, Page Replacement Algorithms: FIFO, Optimal, LRU, Counting; Thrashing and its cause  Practice Tests |
| Week 12 | Unit- 4  File Management: File Concepts, File Attributes, File Operations, File Types, File Access/Allocation Methods, File Protection, File  Recovery  Test |

**Lesson Plan**

**Subject- BCA-232: Data Structures**

**Class- BCA 3rd Sem**

**Teacher- Ms. Ritu Baniwal**

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| **Week** | **Topics to be covered** |
| Week 1 | **Unit- 1**  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. |
| Week 2 | Strings: Introduction, String strings, String operations, Pattern matching algorithms.  Test |
| Week 3 | **Unit- 2**  Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparse matrices |
| Week 4 | Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list |
| Week 5 | 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  Test |
| Week 6 | **Unit- 3**  Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation, Recursion. |
| Week 7 | Other Applications of stacks |
| Week 8 | Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues.  Test |
| Week 9 | **Unit- 4**  Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees |
| Week 10 | Traversal algorithms using stacks and using recursion. |
| Week 11 | Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs. |
| Week 12 | Graph Algorithms  Test |

**Lesson Plan**

**Subject- BCA-116 Programming in C**

**Class- BCA 1st Sem**

**Teacher- Ms. Ritu Baniwal**

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| **Week** | **Topics to be covered** |
| Week 1 | Unit -1  Overview of C: History of C, Importance of C, Structure of a C Program. |
| Week 2 | Unit -1  Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant. |
| Week 3 | Unit -2  Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators |
| Week 4 | Unit -2  Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity |
| Week 5 | Unit -2  Decision making & branching: Decision making with IF statement, IF-ELSE statement,  Nested IF statement, ELSE-IF ladder, switch statement, goto statement.  Test |
| Week 6 | Unit -3  Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement  Practice test |
| Week 7 | Unit- 3  Functions: Definition, prototype, passing parameters, recursion  Test |
| Week 8 | Unit- 4  Arrays: Definition, types, initialization, processing an array, passing arrays to functions |
| Week 9 | Unit- 4  Strings & arrays  Test |
| Week 10 | Unit -4  Storage classes in C: auto, extern, register and static storage class, their scope, storage, &  lifetime |
| Week 11 | Revision & Tests |
| Week 12 | Revision & Tests |

**Lesson Plan**

**Subject- BC (VOC)-305: Data Structure**

**Class- B.Com (CAV) 3rd Sem**

**Teacher- Ms. Ritu Baniwal**

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| **Week** | **Topics to be covered** |
| Week 1 | **Unit- 1**  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. |
| Week 2 | Strings: Introduction, String strings, String operations, Pattern matching algorithms.  Test |
| Week 3 | **Unit- 2**  Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparse matrices |
| Week 4 | Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list |
| Week 5 | 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  Test |
| Week 6 | **Unit- 3**  Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation, Recursion. |
| Week 7 | Other Applications of stacks |
| Week 8 | Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues.  Test |
| Week 9 | **Unit- 4**  Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees |
| Week 10 | Traversal algorithms using stacks and using recursion. |
| Week 11 | Revision & Tests |
| Week 12 | Revision & Tests |