SILVER OAK COLLEGE OF COMPUTER APPLICATION				
BACHELOR OF COMPUTER APPLICATION				
MID SEMESTER SYLLABUS A. Y. 2022 - 2023				
2ND SEMESTER(BCA)				
SR NO	**SUBJECT CODE**	**SUBJECT**	**MID SEM SYLLABUS**	**SUBJECT COORDINATOR**
1	1040273102	Statistical Methods and Operations Research	**Unit-1: Operations Research and Linear Programming Problem** □ Introduction to Operations Research and Linear Programming Problem □ Utility of OR □ Graphical solution of L.P.P. with two variables □ Transportation problem, Assignment Problem and Sequencing problem □ Applications **Unit-2: Game theory and Networks** □ Characteristics of games □ Maximin, minimax criteria of optimality □ dominance property □ algebraic and graphical method of solution of solving 2 x 2 games □ Network Minimization □ PERT and CPM □ Applications **Unit-3:Measures of Central Tendency and Dispersion** □ Concept of central Tendency □ Requirements of good measures of central tendency □ Mean: Arithmetic mean, Geometric mean, Harmonic mean □ Median □ Mode □ Concept of dispersion □ Absolute and relative measures of dispersion **Unit-4:Probability** □ Experiments and random experiments □ Ideas of deterministic and non-deterministic experiments □ Definition of sample space, discrete sample space, events	Ajay Yadav
2	1040233105	Logic Development and Programming-II	**Unit 1 Functions and Recursion:** Concepts of functions with various types of parameters, various types of parameter passing mechanisms, recursive functions and implementation of these concepts in 'C', macros and preprocessors **Unit 2 Pointer:** Definition and Concept, Advantage of using pointer, Pointer Arithmetic, Array of Pointers, Pointers and Functions, Pointers with UDFs **Unit 3 Structures & Unions:** Structures □ Defining a structure □ Accessing a structure variable □ Operations on structure members □ Copying and comparing variables □ Arrays of structure □ Arrays within Structures Unions □ Defining Unions	Jignasha Rajput
3	1040233106	Database Management Systems	**Unit 1: Introduction**: Introduction and applications of DBMS, Purpose of data base, Data, Independence, Database System architecture- levels, Mappings, Database, users and DBA. **Unit 2: Data models:** Entity-relationship model, network model, relational and object-oriented data models, integrity constraints, data manipulation operations, Extended E-R Features, Design of an E-R Database Schema Reduction of an E-R Schema to Tables **Unit 3: Relational query languages:** Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server. **Unit 9 SQL Concepts :** Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, aggregate functions, Built-in functions – numeric, date, string functions, set operations, sub-queries,correlated sub-queries, join, Exist, Any, All ,view and its types., transaction control commands.	Kinjal Patel

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4	1040233107	Data Structures	**Unit 1 INTRODUCTION TO DATA STRUCTURE:** Data Management concepts, Data types – primitive and nonprimitive, Performance analysis and measurement – (Time and Space analysis of algorithms - Average, best and worst case analysis), Types of Data Structures- Linear & Non Linear Data Structures **Unit 2 Linear data structures – Array and Stack:** Array -Representation of arrays, Application of array Stack –Concepts and representation, Operations on stack, Applications of stacks, Polish expression, Reverse polish expression and their compilation, Recursion, Tower of Hanoi **Unit 4 NONLINEAR DATA STRUCTURE – TREE AND GRAPH:** Tree: Definitions , Properties of trees , Representation of binary tree, Binary tree traversal - Inorder, Postorder, Preorder; Threaded binary tree, Binary search trees, Balanced Tree - AVL trees and weighted balance tree Graph: Basic Concept of Graph Theory and its Properties, Matrix Representation Of Graphs, Elementary Graph operations, Breadth First Search, Depth First Search, Spanning Trees, Shortest path, Minimal spanning tree **Unit 6 SORTING & SEARCHING:** Sorting – Bubble Sort, Selection Sort, Quick Sort, Merge Sort, Insertion sort. Searching – Sequential Search and Binary Search	Krupa Vyas
5	1040233108	Operating Systems	**Unit 1 Introduction:** Computer system overview, Architecture, Goals & Structures of O.S, Basic functions, Interaction of O.S. & hardware architecture, System calls, Batch, multiprogramming. Multitasking, time sharing, parallel, distributed & realtime O.S. **Unit 2 Process Management:** Process Concept, Process states, Process control, Threads, Uniprocessor Scheduling: Types of scheduling: Preemptive, Non preemptive, Scheduling algorithms: FCFS, SJF, RR, Priority, Thread Scheduling, Real Time Scheduling. System calls like ps, fork, join, exec family, wait. **Unit 3 Inter Process Communication:** Race Conditions, Critical Section, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution **Unit 4 Deadlock:** Deadlock Problem, Deadlock Characterization, Deadlock Detection, Deadlock recovery, Deadlock avoidance: Banker's algorithm for single & multiple resources, Deadlock Prevention.	Payal Dhanesha