Shri Guru Teg Bahadur Ji Govt. College, Taraori(Karnal)

Dept: Computer Sc.		Teacher: Dr. Abha Narwal
Class: BSc - Ist sem		Subject: B23-CSE-101 (Problem Solving through C)

Month	Week	Lesson Plan
July	week 4	Introduction to c language
August	week 1	Overview of C: History, Importance, Structure of C Program, Character Set, Constants and Variables, Identifiers and Keywords,
	week 2	Data Types, Assignment Statement, Symbolic Constant.
	week 3	Concept of I/O functions in C language Input Functions viz. scanf(), getch(), getche(), getchar(), gets(),
	week 4	output functions viz. printf(), putch(), putchar(), puts(). **Monthly Doubt Clearing Session & Unit test**
September	week 1	Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment,
	week 2	Conditional Operators and Special Operators, Operator Hierarchy; Arithmetic Expressions, Evaluation of Arithmetic Expression,
	week 3	Type Casting and Conversion. Decision making with if statement, if else statement, nested if statement, else-if ladder, switch and break statement, goto statement,
	week 4	Looping Statements: for, while, and do while loop, jumps in loops. **Monthly Doubt Clearing Session & Assignment** 1
October (Week 4 - Diwali Break)	week 1	Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation;
	week 2	Two Dimensional arrays -Declaration, Initialization and Memory representation. **Assignment 2**
	week 3	Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions. function: call by value; call by reference, recursive functions.
	week 5	Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring. **Monthly Doubt Clearing Session & Unit test 2**
November	week 1	Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays
	week 2	User defined data types: Structures - Definition, Advantages of Structure, declaring structure variables, accessing structure members,
	week 3	Structure members initialization, Array of Structures; Unions - Union definition; difference between Structure and Union.
	week 4	Revision, Mega Monthly Doubt Clearing Session; Sessional

Shri Guru Teg Bahadur Ji Govt. College, Taraori(Karnal)

Dept: Computer Sc.		Teacher: Dr. Abha Narwal
Class: BSc - III sem		**Subject: B23-CSE-301** (Operating Systems)

Month	Week	Lesson Plan
August	week 2	Introductory Concepts: Operating System, Functions and Characteristics, Historical Evolution of Operating Systems, Operating System Structure.
	week 3	Types of Operating System: Real time, Multiprogramming, Multiprocessing, Batch processing. Operating System Services, Operating System Interface, Service System Calls, System Programs.
	week 4	Process Management: Process Concepts, Operations on Processes, Process States and Process Control Block. Inter-Process Communication. **Monthly Doubt Clearing Session & Unit test 1**
September	week 1	CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Multiple Processor Scheduling, Algorithm Evaluation.
	week 2	Synchronization: Critical Section Problem, Semaphores, Classical Problem of Synchronization, Monitors.
	week 3	Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance,
	week 4	Deadlock Detection and Recovery. **Monthly Doubt Clearing Session & Assignment** 1
October (Week 4 - Diwali Break)	week 1	Memory Management Strategies: Memory Management of Single User and Multiuser Operating System, Partitioning, Swapping,
	week 2	Contiguous Memory Allocation, Paging and **Assignment 2**
	week 3	Segmentation, Introduction to Virtual Memory Management, Demand Paging
	week 5	Virtual Memory Management: Page Replacement Algorithms, Thrashing **Monthly Doubt Clearing Session & Unit test 2**
November	week 1	Implementing File System: File System Structure, File System Implantation, file operations,
	week 2	Type of Files, Directory Implementation, Allocation Methods, and Free Space Management.
	week 3	Disk Scheduling algorithm- SSTF, Scan, C- Scan, Look, C-Look. SSD Management.
	week 4	**Revision, Mega Monthly Doubt Clearing Session; Sessional**

Shri Guru Teg Bahadur Ji Govt. College, Taraori(Karnal)

Dept: Computer Sc.	**Teacher: Dr. Abha Narwal**
Class: BCA - III sem	**Subject: CC-M3** (Basics of Data Science Using Excel)

Month	Week	Lesson Plan
August	week 2	Introduction to Data Science: Definition, importance, and applications.
	week 3	Overview of Excel: Interface, basic functions, and features. Data Types and Formats in Excel: Text, numbers, dates, and custom formats.
	week 4	Basic Data Manipulation: Sorting, filtering, and basic formulas (SUM, AVERAGE, COUNT). **Monthly Doubt Clearing Session & Unit test 1**
September	week 1	Data Import and Export: CSV, TXT, and Excel files. Data Cleaning Techniques: Handling missing values, duplicates, and errors
	week 2	Data Transformation: Text-to-columns, concatenation, and data validation. Data Visualization: Creating and customizing charts (bar, line, pie).
	week 3	Descriptive Statistics: Mean, median, mode, standard deviation, and variance.
	week 4	Inferential Statistics: Hypothesis testing, t-tests, and chi-square tests. **Monthly Doubt Clearing Session & Assignment** 1
October **(Week 4 - Diwali Break)**	week 1	Regression Analysis: Simple linear regression and multiple regression
	week 2	Predictive Modeling: Introduction to basic predictive models and their implementation in Excel. **Assignment 2**
	week 3	Advanced Excel Functions: VLOOKUP, HLOOKUP
	week 5	INDEX-MATCH, and PivotTables. **Monthly Doubt Clearing Session & Unit test 2**
November	week 1	Data Analysis ToolPak: Using Excel's built-in data analysis tools such as Descriptive Statistics, Histograms, Correlation, and Regression
	week 2	What-If Analysis Tools: Scenario Manager, Goal Seek
	week 3	Goal Seek continue, and Data Tables
	week 4	**Revision, Mega Monthly Doubt Clearing Session; Sessional**

Shri Guru Teg Bahadur Ji Govt. College, Taraori(Karnal)

Dept: Computer Sc.	Teacher: Dr. Abha Narwal

Class: BCA - III sem	Subject: CC-C3 (Data Base Technologies)

Month	Week	Lesson Plan
August	week 2	Basic Concepts – Data, Information, Records, Files, Schema and Instance etc. Limitations of File Based ApproachCharacteristics of Database Approach, Database Management System (DBMS), Components of DBMS Environment, DBMS Functions and Components, Database Interfaces, Advantages and Disadvantages.
	week 3	Database Users: Data and Database Administrator, Role and Responsibilities of Database Administrator, Database Designers, Application Developers etc.
	week 4	Database System Architecture – 1-Tier, 2-Tier & Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances, Data Independence – Logical and Physical Data Independence. **Monthly Doubt Clearing Session & Unit test 1**
September	week 1	Data Models: Hierarchical, Network and Relational Data Models. Entity-Relationship Model: Entity, Entity Sets, Entity Type, Attributes: Type of Attributes, Keys, **Assignment 1**
	week 2	Integrity Constraints, Designing of ER Diagram, Symbolic Notations for Designing ER Diagram, various ER diagrams for practice
	week 3	Relational Algebra: Basic Operations: Select, Project, Join, Union, Intersection, Difference, and Cartesian Product etc
	week 4	Relational Calculus: Tuple Relational and Domain Relational Calculus. Relational Algebra Vs. Relational Calculus. **Monthly Doubt Clearing Session & Assignment 2**
October (Week 4 - Diwali Break)	week 1	SQL: Meaning, Purpose and Need of SQL, Data Types, SQL Components: DDL, DML, DCL and DQL,
	week 2	Views, Specifying Indexes. Constraints and its Implementation in SQL
	week 3	Functional Dependency, Characteristics, Inference Rules for Functional Dependency, Types of Functional Dependency,
	week 5	Normalization: Benefits and Need of Normalization, **Monthly Doubt Clearing Session & Unit test 2**
November	week 1	Normal Forms Based on Primary Keys- (1NF, 2NF, 3NF, BCNF),
	week 2	Multi-valued Dependencies, 4 NF, Join dependencies, 5 NF, Domain Key Normal Form.
	week 3	Numerical Practice based on Normal Forms
	week 4	**Revision, Mega Monthly Doubt Clearing Session; Sessional**

Shri Guru Teg Bahadur Ji Govt. College, Taraori(Karnal)

Dept: Computer Sc.		Teacher: Dr. Abha Narwal
Class: BCA-V		**Subject: Software Engineering**

Month	Week	Lesson Plan
August	week 2	Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes,
	week 3	Phases in Software development: Requirement Analysis, Software Design, Coding, Testing, Maintenance, Software Development Process Models: Waterfall, Prototype,
	week 4	Software Development Process Models: Evolutionary and Spiral models, Role of Metrics **Monthly Doubt Clearing Session & Unit test 1**
September	week 1	Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS,
	week 2	Problem Analysis, Information gathering tools, Requirement specification, validation and metrics
	week 3	Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision trees, Structured English,
	week 4	Entity-Relationship diagrams **Monthly Doubt Clearing Session & Assignment** 1
October (Week 4 - Diwali Break)	week 1	Software Project Planning: Cost estimation: COCOMO model, Project scheduling, Staffing, and personnel planning, team structure,
	week 2	Software configuration management, Quality assurance plans, Project monitoring plans, Risk Management **Assignment 2**
	week 3	Software Design: Design fundamentals, problem partitioning, and abstraction, design methodology,
	week 5	Cohesion & Coupling **Monthly Doubt Clearing Session & Unit test 2**
November	week 1	Software testing strategies: unit testing, integration testing, Validation testing, System testing, Alpha and Beta testing
	week 2	Software Maintenance: Type of maintenance, Management of Maintenance,
	week 3	Maintenance Process, maintenance characteristics
	week 4	**Revision, Mega Monthly Doubt Clearing Session; Sessional**

Shri Guru Teg Bahadur Ji Govt. College, Taraori(Karnal)

Dept: Computer Sc.	Teacher: Dr. Abha Narwal
Class: BSc-V	**Subject: Data Structures**

Month	Week	Lesson Plan
August	week 2	Data Structure: Definition, Data Type vs. Data Structure, Classification of Data Structures, Data Structure Operations, Applications of Data Structures
	week 3	Algorithm Specifications: Performance Analysis and Measurement (Time and Space Analysis of Algorithms- Average, Best and Worst Case Analysis).
	week 4	Arrays: Introduction, Linear Arrays, Representation of Linear Array in Memory, Operations on Array: Algorithm for Traversal, Selection, Insertion, Deletion and its implementation **Monthly Doubt Clearing Session & Unit test 1**
September	week 1	Two Dimensional and Multidimensional Arrays, Sparse Matrix and its Representation
	week 2	String Handling: Storage of Strings, Operations on Strings viz., Length, Concatenation, Substring, Insertion, Deletion,
	week 3	Replacement, Pattern Matching <u>Linked List:</u> Introduction, Array vs. linked list, Representation of linked lists in Memory,
	week 4	Traversing a Linked List, Insertion, Deletion, Searching into a Linked list, Type of Linked List **Monthly Doubt Clearing Session & Assignment 1**
October (Week 4 - Diwali Break)	week 1	Stack: Array Representation of Stack, Linked List Representation of Stack, Algorithms for Push and Pop,
	week 2	Application of Stack: Polish Notation, Postfix Evaluation Algorithms, Infix to Postfix Conversion, Infix to Prefix Conversion, Recursion. **Assignment 2**
	week 3	Introduction to Queues: Simple Queue, Double Ended Queue, Circular Queue, Priority Queue, Representation of Queues as Linked List and Array, Applications of Queue.
	week 5	Algorithm on Insertion and Deletion in Simple Queue and Circular Queue. Priority Queues. **Monthly Doubt Clearing Session & Unit test 2**
November	week 1	Tree: Definitions and Concepts, Representation of Binary Tree, Binary Tree Traversal (Inorder, postorder, preorder)
	week 2	Binary Search Trees – Definition, Operations viz., searching, insertions and deletion; Searching Techniques: Sequential Searching, Binary Searching.
	week 3	Sorting Techniques: Bubble sort, Merge sort, Selection sort, Quick sort, Insertion Sort.
	week 4	**Revision, Mega Monthly Doubt Clearing Session; Sessional**