Lesson Plan July 2024 to November 2025

Name of Teacher: Mr. Amit Bansal

Class: - BSc-5th Sem

Subjects:-Computer Science (OOP using C++)

Date	Topics
July- August 2024	Procedure Oriented Programming, Object-Oriented programming Paradigm, difference between Procedure Oriented Programming and Object-Oriented programming, Basic concepts of Object-Oriented programming, Benefits of OOP, Object Oriented Languages, and application of OOP. Structure of a C++ Program, Insertion operator, Extraction operator, Unformatted and Formatted I/O Operations, inline functions.
September 2024	C structure revisited, specifying a Class, Creating Objects, Defining member function, Memory allocation for objects, Scope resolution operator and its significance, Static Data Members, Static member functions, Friend Function, Friend Class.
October 2024	Dynamic Memory Management using new and delete Operator, Constructor, type of constructors, Dynamic initialization of objects, Constructor overloading, Constructor with default arguments, Destructors, function overloading, Operator Overloading, Overloading unary and binary operators.
November 2024	Inheritance, Single Inheritance, Making a private member inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual Base Class. Abstract Classes, Constructors in derived classes. Hierarchy of Console Stream Classes, Manipulators

Lesson Plan July 2024 to November 2024

Name of Teacher: Mr. Amit Bansal

Class: - BSc-5th Sem

Subjects:-Computer Science (Data Analytics)

Date	Topics
July- August 2024	Data Analytics: Introduction to Data Analytics, Business Intelligence (BI) for better decisions, Decision types, BI tools, BI skills, BI applications. Data warehousing: Introduction to Data warehousing (DW), Design considerations for DW, DW development approaches, DW architecture. Data Mining: Introduction to Data mining, Data cleaning and preparation, outputs of Data mining, evaluation of data mining results, Data Mining Techniques.
September 2024	Decision Trees: Introduction to Decision tree, Decision tree problem, Decision tree construction, Lessons from constructing trees, Decision tree algorithms. Regression: Introduction, Correlations and Relationships, Visual Look at Relationships, Logistic regression, Advantages and disadvantages of regression models. ArtificialNeuralNetworks:Introduction,businessapplicationsofANN,Designprinciplesofan ANN, Representation of a neural network, Architecting a neural network, Developing an ANN, Advantages and disadvantages of using ANN.
October 2024	Cluster analysis: Introduction, Applications of cluster analysis, Definition of a cluster, Representing clusters, Clustering techniques, K-means algorithm for clustering, Selecting the number of clusters. Association rule Mining: Introduction, Business applications of association rules, Representing association rules, Algorithms for association rule, Apriori algorithm, Creating association rules. Web Mining: Introduction, Web content mining, Web structure mining, Web usage mining, Web mining algorithms.
November 2024	Big data: Introduction, Defining big data, Big data landscape, Business implications of big data, Technology implications of big data, Big data technologies, Management of big data. Naïve-base analysis: Introduction, Probability, Naïve base model, Text classification example. Support vector machines: Introduction, SVM model, The kernel method,

Lesson Plan July 2024 to November 2025

Name of Teacher: Mr. Vipin Babbar

Class: - BSc-3rd Sem

Subjects:-DBMS

Date	Topics
July- August 2024	A Historical perspective, File Systems vs. DBMS, Characteristics of the Data Base Approach, Abstraction and Data Integration, Database users, Advantages and Disadvantages of DBMS, DBMS architecture, Data Models, Schemas and Instances, Data Independence. **Entity Relationship (ER) Model:** Basic Concepts-Entity, Attributes, Types of Attributes, Entity set and Keys; Relationships-Relationship set, Degree of Relationship,
September 2024	Mapping Cardinalities. ER diagram representation-Representation of Entity, Attributes and Relationship. Binary Representation and Cardinality, Participation Constraints.
October 2024	**Relational Model :** Relational model concepts (Tables, Tuple, Relation instance, Relation schema, Relation key, Attribute domain), Constraints- Key constraints**,** Domain constraints**,** Referential integrity constraints; Relational algebra, Basic operations: Select, Project, Union, Set difference, Cartesian product, Rename. **SQL:** Why SQL**,** Data Types; DDL-Create, Alter and Drop table Commands. DMLSELECT/ FROM/ WHERE, INSERT INTO/ VALUES, UPDATE /SET/ WHERE, DELETE Commands. UNION [ALL], INTERSECTION and MINUS Operators.
November 2024	**Relational Database design:** Mapping ER model to relational database, functional dependencies, Lossless decomposition, Desirable properties of decomposition, Normal forms (1 NF, 2 NF, 3 NF and BCNF). Revision of the syllabus

Lesson Plan July 2024 to November 2025

Name of Teacher: Mr. Vipin Babbar

Class: - BSc-3rd Sem

Subjects:-Operating System

Date	Topics
July- August 2024	**Structure of Operating Systems:** Layers-MS-DOS Layer Structure, Traditional UNIX System Structure; Running Multiple Operating Systems, Running a Virtual Operating System, Operating System Modes, System Boot. **Process Management:** Introduction to Process, Attributes of a process, Process States, Operations on the Process, Process Schedulers, CPU Scheduling, Scheduling Algorithms, Purpose of a Scheduling algorithms, Introduction to FCFS, Shortest Job First (SJF), Shortest Job First (SJF), Round Robin Scheduling Algorithms.
September 2024	**Memory Management:** Fixed and Dynamic partition, Physical and Logical Address Space, Page Table, Mapping from page table to main memory, Page Table Entry, Size of the page table, Finding Optimal Page Size. Virtual Memory Concepts, Advantages and disadvantage of Virtual Memory. Segmentation, Translation of Logical address into physical address by segment table, Advantages and disadvantage of Segmentation. Paging VS Segmentation.
October 2024	**File Management:** Attributes of File, Operations on File; File Access Methods- Sequential, Direct and Indexed Access; Directory Structure, File Systems, File System Structure- different layers; Master Boot Record, Directory Implementation-Linear List and Hash Table; Disk space Allocation Methods- Contiguous Allocation and FAT. **Shell introduction and Shell Scripting:** What is shell and various type of shell
November 2024	**Shell introduction and Shell Scripting**Various editors present in Linux/Unix; Different modes of operation in vi editor; Shell script, Writing and executing the shell script, Shell variable (user defined and system variables); System calls, Pipes and Filters, Decision making in Shell Scripts (If else, switch), Loops in shell, Utility programs (cut, paste, join, tr , uniq utilities), Pattern matching utility (grep)

Lesson Plan July 2024 to November 2025

Name of Teacher: Mr. Vipin Babbar

Class: - BSc-1st Sem (DSC)

Paper : Fundamentals of Computer and Programming in C

Subjects:-Date	Topics
July- August 2024	**Basics of Computers:** Definition of a Computer - Characteristics and Applications of Computers – Block Diagram of a Digital Computer – Classification of Computers based on size and working – Central Processing Unit – I/O Devices. **Storage:** Primary, Auxiliary and Cache Memory – Memory Devices. Software, Hardware, Firmware. **Operating System** – Definition and Functions of an Operating System – MS-DOS – MS Windows – Desktop, Computer, Documents, Pictures, Music, Videos, Recycle Bin, Task Bar – Control Panel.
September 2024	**C Programming Fundamentals:** Keywords, Variables and Constants, Structure of a C Program, Input/Output. **Operators & Expressions:** Arithmetic, Unary, Logical. Bit-wise, Assignment & Conditional Operators **Decision Making:** Decision making using if...else. Else If Ladder; Switch, break. Continue and Goto statements. **Loop Control Structure:** While and do-while, for loop and Nested for loop, Decision using switch; goto, break and continue statements.
October 2024	**Functions:** Introduction, using functions – Function declaration/ prototype – Function definition function call – return statement – Passing parameters , Recursive functions **Arrays**: Introduction, Declaration of Arrays , Accessing elements of the Array – Storing Values in Array, Passing array element to a function: Call by Value and Call by Reference, One dimensional array -declaration, initialization, Accessing one dimensional array, Two dimensional Arrays-declaration, initialization, Accessing two dimensional arrays.
November 2024	**Strings:** Introduction , String and Character functions**,** String Operations using String functions- strcat() , strcmp() , strcpy() , strlen(). **Pointers:** Declaring Pointer Variable, Pointer Expressions and Pointer Arithmetic , Passing Arguments to Functions using Pointers. Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() functions **Structures and Unions:** Declaration of structures, Structure Initialization, Accessing structure members, Arrays of structure, Nested structures, Structure with pointers, Union

Lesson Plan July 2024 to November 2025

Name of Teacher: Mr. Amit Bansal

Class: - BSc-1st Sem (Minor)

Subjects:-Computer Programming Fundamentals

Date	Topics
July- August 2024	Overview of programming concepts, **Computer Languages**: Machine Language, Assembly Language, High Level Language; Source code, Compiler, Interpreter, Object Code;
September 2024	Algorithm, Flow Chart and pseudocode, Basics of problem-solving in programming, Debugging, **Error**: Types of Error.
October 2024	**Data types:** integers, floating-point numbers, strings, and Booleans, Variables and constants, Input/output operations, Operators and expressions,
November 2024	**Conditional statements**: if, else if, else, **Loops:** while loops, for loops; Control structures: break, continue;

Lesson Plan July 2024 to November 2025

Name of Teacher: Mr. Amit Bansal/ Mr. Vipin Babbar

Class: - BA/BSc in Life Sciences/BA with Major in Geography -1st Sem (SEC)
Subjects:-Office Tools

Date	Topics
July- August 2024	Operating System - Definition, Functions, Types of Operating System, Basics of Popular Operating Systems, The User Interface, Exploring Computer, Icons, taskbar, desktop, Using Menu and Menu-selection, managing files and folders, Control panel – display properties, add/remove software and hardware, Common utilities.
September 2024	Word Processing - Introduction to Word Processing, Menus, Creating, Editing & Formatting Document, Spell Checking, Printing, Views, Tables, modifying page setup, applying document themes, applying document style sets, Inserting headers and footers
October 2024	Spread Sheet: Elements of Electronics Spread Sheet, Applications, Creating and Opening of Spread Sheet, Menus, Manipulation of cells: Enter texts numbers and dates, Cell Height and Widths, copying of cells, Mathematical, Statistical and Financial function, Drawing different types of charts, Sort and Filter Data
November 2024	Creating Presentation, Type of presentation views. Using sound, Animation, Working with Objects, and Printing.