Government College Aharwala, Bilaspur (Yamunanagar)
Lesson Plan (Session- 2025-26)
(Odd Semester)

Name of Teacher: Dr. Satnam Singh
Department : Computer Science

Class & Semester: B.A. 1ST Sem. (NEP)
Subject & Code: B23-SEC-103: Basic IT Tools

July

Introduction to Computer: Computer and Latest IT gadgets, Evolution of Computers & its applications, Basics of Hardware and Software, Application Software, Systems Software, Utility Software. Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Mobile Apps.

Aug

Introduction to Operating System, Functions of the Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop, Task Bar, Icons ☐ & shortcuts, Running an Application, Operating System Simple Setting, Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management.

Sep.

Introduction to Internet and World Wide Web, Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology, Internet, Applications of Internet, Website Address and URL, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Popular Search Engines, Searching on the Internet.

Oct.

E-mail: Using E-mails, Opening Email account, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, replying to an E-mail message, forwarding an E-mail message, searching emails, Attaching files with email, Email Signature.

Nov.

Social Networking: Facebook, Twitter, Linkedin, Instagram, Instant Messaging (WhatsApp, Facebook Messenger, Telegram), Introduction to Blogs, Digital Locker

Government College Aharwala, Bilaspur (Yamunanagar)
Lesson Plan (Session- 2025-26)
(Odd Semester)

Name of Teacher: Dr. Satnam Singh
Department : Computer Science
Class & Semester: B.C.A. 3RD Sem. (NEP)
Subject & Code: B23-CAP-302 Linux and Shell Programming

July

Introduction to Linux: Linux distributions, Overview of Linux operating system, Linux-architecture, features of Linux,

Aug.

Accessing Linux system, starting and shutting down system, logging in and logging out, comparison of Linux with other operating systems.

Command in Linux: General-Purpose commands, File oriented commands, directory, oriented commands, communication-oriented commands, process oriented commands etc.

Sep.

Regular Expressions & Filters in Linux: Simple filters viz more, WC, diff, sort, uniq, grep. Introduction regular expressions.

Linux File System: Linux files, inodes and structure and file system, file system components, standard file system, file system types.

Oct.

Processes in Linux : Starting and stopping processes, initialization processes,

Mechanism of process creation, job control in Linux using at, batch, cron and time.

Shell Programming: vi editor,

Nov.

Shell variables, I/o in shell control structures, loops, shubprograms, creating and executing shell scripts in linux.

Government College Aharwala, Bilaspur (Yamunanagar)
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Name of Teacher: Dr. Satnam Singh
Department : Computer Science
Class & Semester: B.C.A. 3RD Sem. (NEP)
Subject & Code: B23-CAP-304 Basic of Data Science Using Excel

July

Introduction to Data Science: Definition, importance, and applications. Overview of Excel: Interface, basic functions, and features.

Aug.

Data Types and Formats in Excel : Text, Numbers, dates, and custom formats. Basic Data Manipulation: Sorting, filtering and basic formulas (SUM, AVERAGE, COUNT).

Data Import and Export: CSV, TXT and Excel files. Data Cleaning Techniques Handling missing values, duplicates and errors. Data Transformation:

Sep.

Text-to-columns, concatenation, and data validation. Data Visualization: Creating and Customizing Charts (bar, line, pie).

Descriptive Statistics: Mean, median, mode, standard deviation and variance.

Inferential Statistics: Hypothesis testing, t-tests, and chi-square tests. Regression Analysis: Simple linear regression and multiple regression. Predictive Modeling : Introduction to basic predictive models and their implementation in Excel.

Oct.

Advanced Excel Functions: VLOOKUP, HLOOPKUP, INDEX-MATCH and

PivotTables. Data Analysis ToolPak: Using Excel's built-in data analysis tools such as Descriptive

Nov.

Statistics, Histograms, Correlation, and Regression. What-If Analysis

Tools: Scenario Manager, Goal Seek and Data Tables.

Government College Aharwala, Bilaspur (Yamunanagar)
Lesson Plan (Session- 2025-26)
(Odd Semester)

Name of Teacher: Dr. Satnam Singh
Department : Computer Science
Class & Semester: B.A./B.Sc.(PS/ B.Sc.(LS)) 3RD Sem. (NEP: Major & Minor)
Subject & Code: B23-CSE-301 Concept of Operating System

July

Introductory Concepts: Operating System, Functions and Characteristics, Historical Evolution of Operating Systems, Operating System Structure.

Aug.

Types of Operating System : Real time, Multiprogramming, Multiprocessing, Batch processing.
Operating system services, operating system interface, Service system calls, system programs.
Process Management: Process Concepts, Operations on Processes, Process States and Process Control Block, Inter Process Communication.

Sep.

CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Multiple Processor Scheduling, Algorithm Evaluation.
Synchronization: Critical section Problem, Semaphores, Classical Problem of Synchronization, Monitors.
Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery.

Oct.

Memory Management Strategies: Memory Management of Single-User and Multiuser Operating System, Partitioning, Swapping, Contiguous Memory Allocation, Paging and Segmentation;
Virtual Memory Management: Demand Paging, Page Replacement Algorithms, Thrashing.

Nov.

Implementing File System: File System Structure, File System Implantation, File Operations, Type of Files, Directory Implementation, Allocation Methods, and Free Space Management.
Disk Scheduling Algorithm: SSTF, Scan, C-Scan, Look, C-Look.SSD Management.

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(Odd Semester)

Name of Teacher: Dr. Satnam Singh
Department : Computer Science
Class & Semester: B.C.A. 5TH Sem. (NEP)
Subject & Code: B23-CAP-501 Software Engineering

Aug.

Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis-problem and causes, Phases in Software development: Requirement Analysis, Software Design, Coding, Testing, Maintenance, Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models, Role of Metrics.

Sep.

Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS, Problem Analysis, Information gathering tools, Requirement specification, validation and metrics. Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision trees, Structured English, Entity-Relationship diagrams

Oct.

Software Project Planning: Cost estimation: COCOMO model, Project scheduling, Staffing, and personnel planning, team structure, Software configuration management, Quality assurance plans, Project monitoring plans, Risk Management. Software Design: Design fundamentals, problem partitioning, and abstraction, design methodology, Cohesion & Coupling.

Nov.

Software testing strategies: unit testing, integration testing, Validation testing, System testing, Alpha and Beta testing. Software Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process, maintenance characteristics.

Government College Aharwala, Bilaspur (Yamunanagar)
Lesson Plan (Session- 2025-26)
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Name of Teacher: Dr. Satnam Singh
Department : Computer Science
Class & Semester: B.COM (CAV) 5TH Sem. (NEP)
Subject & Code: B23-VOC-129 Database Management System

Aug.

Database Management System (DBMS): Concept, data, information, records, files, schema and instance etc; Limitations of File-based approach; Characteristics of database approach; DBMS: Components, functions, database interfaces, advantages and disadvantages, Database Users: Data; Database administrator: Role and responsibilities;

Sep.

Database Designers, application developers etc.. 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.

Data Models: Hierarchical, network: Relational data models: Entity-Relationship Model: entity, entity sets, entity type, Attributes: Type of attributes, keys; Integrity constraints; Designing of ER Diagram; Symbolic notations for designing, ER Diagram.

Oct.

SQL Meaning, purpose and need of SQL; Data Types; SQL Components: DDL, DML, DCI, and DQL, basic queries, join operations and sub-queries; Views; Specifying Indexes, Constraints and its implementation in SQL; Relational Algebra: Basic operations: select, project, join, union, intersection, difference and Cartesian product etc; Relational Calculus: Tuple Relational and Domain Relational Calculus. Relational Algebra v/s Relational Calculus.

Nov.

Relational Model: Functional dependency- characteristics, inference rules and types; Normalization: benefits and need, normal forms; Based on Primary Keys (INF, 2NF, 3NF, BCNF), Multi-valued Dependencies, 4NF, join dependencies, 5NF, domain key normal form.